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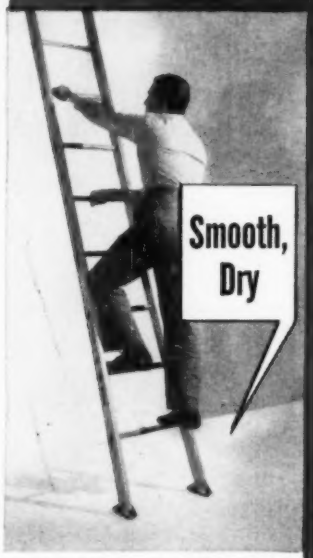

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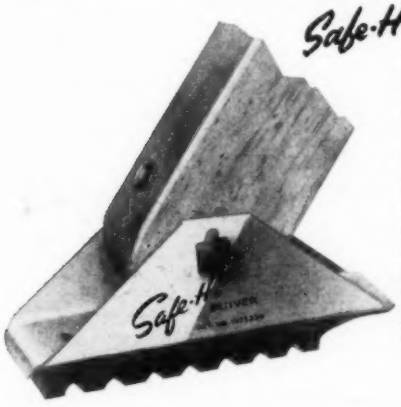

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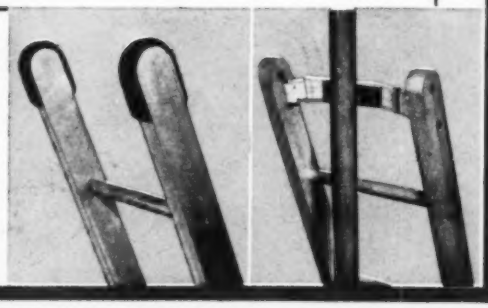

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It's Safe to Say

EDITORIAL PAGE BY ALFRED M. BEST

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★ MAINTENANCE AND SAFETY

THAT plant maintenance in general and good housekeeping practices in particular are practically synonymous with safety was demonstrated at the Plant Maintenance Show in Cleveland late last month. Upwards of fifteen thousand visitors gathered for the most intensive study of plant maintenance ever attempted by American industry.

From its modest start of just three years ago, the week-long exposition and conference has grown to one of the largest in the country with displays covering an area more than six times that of the first such show which was held in 1950.

The tremendous interest in plant maintenance stems from two causes. Management needs no "selling" of the premise that without good maintenance there can be no good safety records with their attendant economies. Further, the arrival of the so-called "push-button" factory which experts predict is fast approaching, will focus added attention on the upkeep of machines as well as morale—two major factors in the surge toward higher production levels.

It has been said that industry is on the threshold of a profound revolution in manufacturing methods in which production is becoming more automatic and maintenance is becoming more complicated. Gone is the day when the word maintenance conjured up the vision of a tired old pensioner wielding a brush or a mop when it was no longer possible to walk through debris-cluttered aisles.

Housekeeping for industry is now definitely big business and the savings to be realized through installation of modern maintenance methods can reach colossal proportions. Pushing a broom is a commonplace job and therefore it is easy to accept inefficient, outmoded cleaning methods. A little study, however, often opens the door to big savings in better labor relations, sharp drop in absenteeism caused by ill health, reduced accident costs arising from removal of accident hazards.

Business both large and small must give ever-growing attention to the safety of its employees both because it is the humanitarian thing to do and because good safety practices can be one of the most economical phases of plant operation. It has been shown that if any organization can so control its working areas to provide the utmost safe conditions and at the same time, educate its people to pursue their tasks without injury, that organization is well directed. It should be obvious that any company having a poor safety performance is falling down on many of its other responsibilities as well.

It is axiomatic that the average industrial employee is not equipped to take over full responsibility for his own safety without adequate direction. By precept and example he must learn to change individual conduct to conform with safety requirements and practices. It follows then that in a plant whose maintenance methods are inadequate, slip-shod or practically non-existent, the example of good safety procedure just is not there!

A thoroughly developed and efficient method of industrial cleaning and sanitary maintenance on a practical level has done wonders in reducing both the frequency and severity of industrial plants. This basic approach to cleaning, sanitation and safety problems is proving fruitful in effecting impressive economies through reduction in accident costs and maintenance of wages. Thus, management and labor become co-beneficiaries of good maintenance.

Every plant, no matter how small, can benefit by a "preventive maintenance" program, according to one representative company. The National Biscuit has installed such a program in plants having only three maintenance employees and in others with maintenance personnel up to 250 men.

In the last analysis, it is top management that must be convinced that safety and maintenance go hand in hand and that, like the Siamese twins of old, there is little chance that one will survive if the other is cut away.

—H.A.

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EST. 1901

VOL. 105, NO. 2 **FEBRUARY, 1953**

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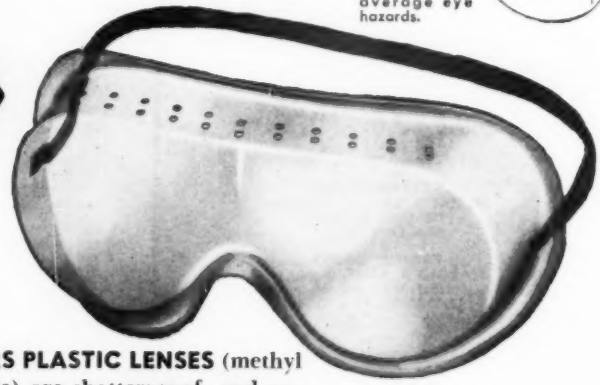

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SAFETY MAINTENANCE & PRODUCTION
VOL. 105, No. 2 • FEBRUARY, 1953

Protective equipment is available for employees, but,

HOW.....

Do You Get Them To Use It?

By LOUIS A. GREINER
Sales Engineer
Mine Safety Appliances Co.
Long Island City, N. Y.

LET me emphasize at the beginning that "*getting*" people to use protective equipment is not "*making*" them use it. Often it is accident prevention programs which confuse the two terms which end in failure. Telling an employee that he "*must*" use a certain safety device is not "*getting*" him to use it.

In many plants the man in charge of safety is looked on as a sort of law enforcement officer. He is a peculiar type of individual—one who is always thinking up some rule or idea which he expects to be carried out to the letter. However, any safety program which compels, forces or even requires people to use safety equipment is never so successful as one which *gets* people to use protective equipment. Any program in which the safety director sets out to make people *obey* is, in my opinion, attempting to sell safety the hard way. Such a program is an indication that the safety man has failed to study the problem thoroughly and, therefore, must make it mandatory because he cannot put over the idea with sound reasoning and logic.

When we get people to do something, it is because we have taken sufficient time to prevail on, induce or persuade. I have never witnessed the complete failure of a safety program that used this method. On the other hand few are successful when people are compelled to use certain equipment.

To get people to do anything, you must understand them and work with them. Otherwise, you will not get them to work with you. If you are not interested in the welfare of those you are trying to persuade it is doubtful that you can convey any useful ideas to them. It is equally doubtful that anyone can give you any help in the matter. However, it is difficult to believe that anyone who undertakes the job of safety director or safety engineer is not also a humanitarian.

Another necessity, when you are trying to get people to do something, is a certainty in your own mind that what you are trying to get them to do is the best possible solution to the immediate problem. This means studying the problem thoroughly and using every resource to support the safety program. In

For detailed descriptions of protective equipment see the 1952–53 edition of "Best's Safety & Maintenance Directory."

studying the problem it is not enough to rely on the literature available. The assistance of other agencies should be enlisted in order to draw from their experience and knowledge important details for the success of the program.

Here are some of the agencies which can help you get people to use protective equipment: manufacturers of personal protection equipment, management, labor unions, and government agencies.

Equipment Manufacturers

How can manufacturers of personal protection equipment help? As a matter of fact they are in the best position to help you. They are constantly striving to make a more efficient, safe, comfortable, lighter weight and more attractive product. They sell these products in all types of industries and are in the best position to know where and how they are applied successfully. They are willing to let you try their products so you can make a personal study of the equipment.

Some few safety engineers have purchased safety equipment to be used in their plants but have never tried, worn or used the equipment personally. How, then, can they expect the people in the plant to use it without opposition? Using the assistance of safety manufacturers will help ensure the success of any safety program.

Management's Help

Management, too, can help in getting people to wear protective equipment. I can illustrate this best by describing an incident that recently occurred at one shipyard. During the war this particular shipyard made 100 percent use of protective hats. After the war, however, management relaxed its interest in safety hats and failed to make hats available to employees. The wearing of hats disappeared and head injuries increased. The safety engineer recognized that he would have to bring protective hats back on the job.

To accomplish this he enlisted the aid of management, but not in making the wearing of hats mandatory. He did not want to *make* the workers do anything. He wanted to get them to wear hats, and he sold his idea to management. In a short time all management personnel—managers, superintendents and foremen—were to be seen wearing protective hats whenever they were in the yard. Within a few weeks workmen in the yard wanted to know why they couldn't be supplied with these hats. Now several hundred hats are in daily use at this yard. Why? The program was presented by gaining management cooperation and without the use of force. This is but one of the ways in which management can assist a safety program.

The personnel department, too, can be of help by selecting employees willing to cooperate in the safety program.

Aid from Unions

In any discussion of getting people to use protective equipment we cannot overlook the valuable contribution that employee's unions can and do make. Always interested in the safety and welfare of their members, unions often send a representative to safety meetings. I have attended some of these meetings and seen what an active part union delegates play. In many cases they work with the safety engineer or director in persuading their members to use the recommended safety equipment. I have also heard them reprimand management for failure to make protective equipment available to workers. It is a good idea to sell the union delegate on the use of a piece of protective equipment before attempting to put it into use.

To illustrate the importance of union cooperation, let me relate one actual case. In a project at a public utility, men were being made ill by an unknown condition. The work was considered an emergency and time could not be taken to make a thorough survey of the condition. The union representative refused to permit members to do the work until suitable protective equipment was supplied. Luckily, the safety engineer was on friendly terms with the union representative, and convinced him that a type of protective equipment the engineer could suggest would be suitable no matter what type of hazard existed. They agreed, provided that a representative of the manufacturer of the equipment stayed on the job to see that the man were wearing the equipment properly.

Many management associations such as the Printers' Association, Publishers' Association and New York Shipping Association Safety Bureau are useful in selling a safety program. The last bureau named has been set up by the stevedoring and terminal operating industry in the Port of New York to survey waterfront safety conditions. It is obvious what an aid an organization like this, which covers 41 thousand dock-workers, can be in getting workers to accept new protective equipment.

Government Agencies

Many government agencies, too, can be of aid to the safety engineer or director in getting people to wear protection. It is unfortunate that most of their work, with the exception of the Bureau of Mines, results in laws being passed *making* workers and management do something. Their function is necessary and valuable because it results in management making available protective equipment to employees. It is most valuable in small plants and industries where safety engineers are not employed.

An exception is the U. S. Bureau of Mines, which functions in an advisory capacity, investigating accidents and approving types of safety equipment. To the safety engineer they can be of service in the selection of the most efficient types of equipment. Most of their work on personal protective equipment is confined to the respiratory field. This, however, is important to the safety engineer since he is unlikely to have equipment available to

(Continued on page 23)

STONEHOUSE SIGNS For ACCIDENT PREVENTION

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DO NOT ENTER WHILE MACHINERY - IN MOTION -
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GOOD MAINTENANCE

The preventive maintenance program of a large hospital shows that good maintenance not only eliminates slippery floor conditions but also removes other causes of accidents.

By HAROLD E. D'ARCY
Safety & Maintenance Consultant
Memorial Hospital
New York City

A LEADING insurance organization has reported that eighty percent of all accidents reported by hospitals resulted from hazards that could have been practically eliminated at little or no cost. The report outlines the nature and location of some of the hazards responsible for accidents in hospitals, such as insufficient lighting on stairways, stairways that are used as storage spaces for mops, pails, and other equipment, defective stair treads and coverings, floor areas made slippery by improper cleaning methods and the use of unsafe floor maintenance materials.

To my mind the most dangerous and most unnecessary of these are the accidents suffered on floor areas made slippery by improper cleaning methods and by the unsafe maintenance materials. Both of these hazards will of course result in high percentages of slip and fall accidents and high insurance costs. Yet they come within the category of those 80 percent of all hospital accidents that the report claims could have been prevented at little or no cost, plus a little housekeeping department "know how." All things considered, *it costs far less to maintain safety under foot than it costs to ignore it.*

What Kind of Floor?

There are many different types of floor coverings all requiring different maintenance materials and methods to make for safety underfoot. By the same token, there is not on the market today a floor polish which is both safe and sure for the maintenance of all types of floor surfaces. Failure to understand the material difference in certain types of floorings and failure to apply the correct required maintenance will definitely result in slip and fall accidents and high insurance costs.

One large hospital, finding that it had high accident rates plus high insurance costs, resolved to do something about it. In conjunction with its insurance carrier, it studied the reasons and found it was using both the wrong materials and the wrong methods. Wisely, and after considerable research, it decided to have some leading floor polish manufacturers demonstrate their products in order to find materials which could be guaranteed safe, durable and economical. As well as resisting abrasion, the polish had to enhance and preserve the beauty of the floors without increasing maintenance costs. After a careful trial and elimination program, a selection was made. The plan worked out well and there were definite reductions in the number of slip and fall accidents, and still more remarkable, a twenty-five percent reduction in the number of man hours required to do the job. Of equal importance, the manufacturer followed through with an on-the-job training program in the correct use of his product. This on-the-job training guaranteed safety underfoot and also prevented any misuse of the products because as they came into the hospital, the correct methods of use were instantly taught to the workers. Safety underfoot, in this instance, thereby became a reality and passed out of the realm of wishful thinking.

Safety underfoot is that guarantee that the coefficient of friction provides the walker complete freedom in his or her own walking manner, without the necessity to be on guard or protect himself or herself on slippery floors. An attempt to walk on slippery floors is fatiguing and results in a loss of efficiency, physically and mentally. In such a condition a person is prone to many other types of accidents.

The prevention of slip and fall accidents should begin with the purchase of the very first gallon of floor cleaner and floor polish that comes

STOPS ACCIDENTS

into the hospital, and should follow through with inspection after inspection, through every phase of the cleaning and polishing operation on every different type of flooring throughout the hospital.

Not only should the correct methods of application be observed, but the safety of all visitors and personnel who must move around in the areas being cleaned should be protected by guard ropes and wet floor warning signs. Safety plus efficient planning should be the foundation of today's hospital housekeeping department.

In the past, it has been my experience that the two greatest factors in building up a safety program are:

1. Preventive Maintenance
2. The follow-up of the Preventive Maintenance Report

Preventive Maintenance

Preventive maintenance, as it applies to housekeeping, is a systematic program of inspection of buildings and floors, and of the work performed by every worker. Inspections that will bring to light the physical irregularities of equipment, improper work practices, unreliable workers, improper materials and any other excess or deficiency that could result in injury, or perhaps eventual loss of life to patients, visitors or personnel. Safety is born of preventive maintenance, supervised from a top executive level.

Report System

It should be taught as a job responsibility thereafter, so it will become part of the instinctive knowledge of the worker. In order to strive for the highest standards of accident prevention in hospitals, supervisors and then workers should be encouraged to report in writing to the department head any and all irregularities they observe during their daily or nightly work. The report should be broad and encompassing. Burned out ceiling lights could cause a patient or a member of the staff to fall over a piece of furniture or to stumble into a piece of equipment, causing serious internal injuries. A piece of torn floor covering or a missing floor tile could cause another falling accident. A loose electric wire could cause the same type of accident in addition to severe electric shock or burns. A broken window pane might cause severe lacerations to a patient fumbling with it to protect himself from the cold air blowing in through the

broken glass. A defective ladder kept in service, because it was not reported out of order, might easily cause life-long injuries to a carpenter, plumber or porter. The observation, reporting and the follow-up for the eventual removal of these hazards form the nucleous, the hub of a successful preventive maintenance program.

The system of follow-up of these reports is as important as the report itself. Of course, today there is a painful shortage of experienced help, and a consequent limitation on just how soon defects can be removed and repairs effected; but the department head who first received the report from his subordinates should see that a definite time limit is set on the repair, depending on the urgency of the situation. If the situation has not been remedied after that time limit, the matter should be brought at once to the attention of the administrator or the superintendent, together with the reason why the hazard should be removed immediately.

Maintenance Prevents Fires

The National Fire Protection Association's Department of Fire Record for 1948 indicates that during that year there were eleven hundred fires in hospitals and institutions, with a property loss of two million dollars. These dreadful figures represent a typical year when no major fire disasters were reported. The greatest tragedy of so many fires is that a large percentage of them could have been readily prevented by the observation of the common rules of maintenance, and a preventive maintenance program. The N.F.P.A.'s manual on "Hospital Fire Safety" steadfastly maintains that cigarette smoking and the careless uses of matches are responsible for one fifth or twenty percent of all the fires that ever happened anywhere. I am looking forward to that day when smoking is as much forbidden in certain areas of the hospital as it is in the theatres and department stores. We have sick human lives to take care of and they are very important lives to us and to their families.

The housekeeping department of today's hospital, must of necessity become more involved in the overall fire prevention program. In the old days, our part was confined mainly to the storage of materials used in maintenance and equipment, but today it is a different story.

Conductive Floors

In addition to controlling slip and fall accidents on conventional types of floor coverings, we are now faced with the problem of proper maintenance of conductive floors in operating rooms and areas where anaesthesia is administered. Conductive floors are a highly technical type of flooring, so constructed that they are capable of providing a pathway to ground for the dissipation of electro-static charges on all equipment and personnel, providing of course, the equipment and personnel are grounded to the conductive floor. To meet the challenge of correct and preventive maintenance of conductive floorings, a full knowledge of their make up and requirements must be acquired. The N.F.P.A.'s Bulletin #56 establishes the code of requirement that must be met by the flooring manufacturers and it specifies the floor must have not less than twenty-five thousand ohms, nor more than five hundred thousand ohms resistance. This is an important fact because whatever is done wrong in maintaining the floor will instantly increase the resistance that was built up in the floor and the floor will be a safety hazard.

To this end, ordinary waxes and cleaners cannot be used, as they form an insulating film that will cover the surface of the floor. We have found there are polishes that will not insulate and will allow us to maintain the areas in much the same manner as our other floors. Regular weekly readings taken with a megohmer are recorded, and when it is noted the resistance is increasing, the maintenance methods are investigated and the condition corrected before it becomes a hazard. These facts are all part of the sound preventive maintenance program. If we are to be progressive and get the "know how," we must go all out to set up an intelligent accident prevention program. Half measures never accomplish anything but false hopes and the realization that you are out on a limb if a serious accident should happen.

Take the guesswork out of your accident prevention program—unless and until you do, your safety program will not pay off.

From an address presented at the 22nd Annual Greater New York Safety Convention.

Safety Views

A VARIETY of approaches to accident prevention were presented by speakers at the National Safety Congress in Chicago.

When labor and management in the Pacific coast pulp and paper industry anually sit down and talk safety, less distress for the worker and more profits for management are the results, according to Robert M. Gilmore, of the Pacific Coast Association of Pulp and Paper Manufacturers. Since 1945, he said the injury frequency rate in that industry has dropped 80 per cent because of "labor-management teamwork."

Speaking before a trade association safety "swapshop," Mr. Gilmore pointed out that conferences provide clearing houses for safety tips. "There seems to be a full awakening to the practical possibilities of reducing accidents by the scientific approach of safety education, training and the development of safer work practices in our mills," he declared. He also reported the program has helped avoid 6 thousand industrial accidents since 1945. In addition, it has meant lower insurance rates for management, he added.

The burden of workmen's compensation properly falls upon society, the Congress was told by D.

(Continued on page 26)

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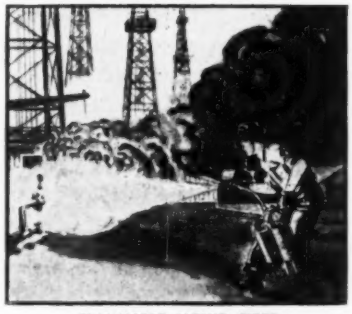

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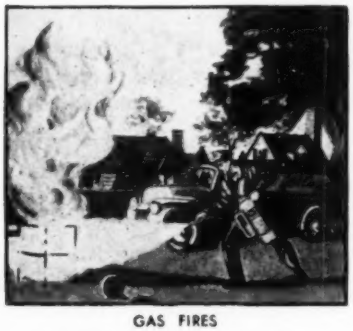

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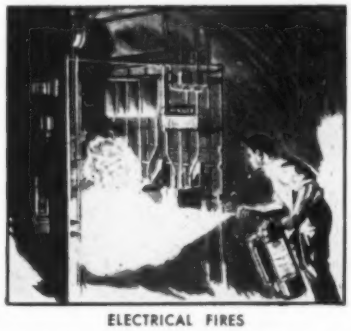

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FEATURE

This is the second of a series of three feature articles on Power Press Safety. The final article of this series will be published in the March issue of SAFETY MAINTENANCE & PRODUCTION.

To Protect Workers In Our Pressroom Operations, We Use

DIE GUARDS

By A. E. BLANK
Safety Engineer
General Electric Co.
X-Ray Department
Milwaukee, Wis.

THE punch press section is probably the most hazardous section of the Milwaukee plant of the General Electric Company, X-Ray Department. Here, safety is a must. Although tweezers, vacuum tools, two-hand press clutch tripping devices and other means of protection are used, the major portion of the dies have been fully enclosed with individual "fixed barrier" guards. (See Fig. 1.) By employing this system the operator can't even "go out of his way" to get hurt.

The responsibility of this guarding has been put into the hands of the tool room supervisor, although the die designer takes into consideration the fact that dies must be guarded when he is designing the tool. It is seldom necessary for the designer to show the guard on a tool drawing, for in some cases it takes less time for an experienced tool room machinist to make and mount the guard than it does to make a detailed drawing of it.

A stock of standard guard material, which is mild sheet steel 6 inches wide and 1/16 inches thick, and which has been punched with vertical rows of oblong and square holes on a standard die set, is kept in the toolroom. Each vertical row of holes consists of two 5/16 inch by 1¼ inch oblong holes and three 5/16 inch square holes separated by 3/16 inch wide sections of metal. The rows of holes are on 7/16 inch centers, with ⅛ inch wide strips of metal separating each pair of vertical holes. (See Fig. 1.)

The tool room machinist cuts the guard strip to the proper length and width and bends it to fit, guided by a ram clearance template.

Templates are kept in the toolroom for all sizes of punch presses and indicate to the machinist how much

For detailed descriptions of die guards and other machinery guards see pages 420–426 of "Best's Safety & Maintenance Directory" 1952–53 edition.

Fig. 1. Pictured are a variety of dies which have been completely guarded. Included are ram clearance templates and stock material. Note the straight and taper type coil spring guards which are used.

clearance is needed to eliminate interference of the ram in the set up. Brackets are then soldered in place so the guard can be attached to the die shoe or punch holder with machine screws.

In many cases, a guard attached to the die shoe is sufficiently high to enclose the bottom on the punch holder even when the press ram is at the top of its stroke. In such cases no guard is needed on the punch holder. But where the press stroke is too long, or die design makes a high guard fence undesirable, guard strips are mounted on both shoes. The fence on the punch holder follows closely the contour of the lower fence, and slides inside it, so no nip points are exposed at the top of the press stroke. (See Figs. 2 and 3.)

Every punch and die set fitted with an individual fixed barrier guard has plainly stamped on the front surface the length of stroke of the presses in which the die set can be used. This is to eliminate the possibility of a die set guarded for a 1½ inch stroke press being used on a 2 inch or 2½ inch stroke, and thus opening the die beyond the height of the guards. Stamping this information on the front of the die shoe, or on the lower guard itself, makes it possible for the supervisor or worker to see quickly if the die is being employed in the right press.

Another problem which has confronted the punch press section is the guarding of a single-point universal piercing die shoe which has inter-changeable punches, button dies, strippers and adjustable stops.

This problem has been solved by the design of a universal coil spring type guard. (See Figs. 4 and 5.) This guard can be used on all presses with a stroke range of up to 4 inches. On the short stroke presses a straight coil spring guard is employed, and on the longer stroke presses, a cone-shaped coil spring guard. (See Fig. 1.)

A collar, soldered to the upper portion of the coil, is fitted to the shank of the punch holder. The guard is secured to this punch holder by means of two set screws. The lower portion of the guard is fitted to a counter-bored surface on the inter-changeable positive stripper. (See Figs. 4 and 5.) *(Continued on page 47)*

Fig. 5. This picture shows press at the bottom of stroke and illustrates how coil guard compresses with each stroke of the press.

Fig. 4. This is a view of a press at the top of the stroke, showing coil spring guard on the die for single point piercing operation.

Fig. 2. Illustration shows careful fitting of fence to contour of upper part of this die.

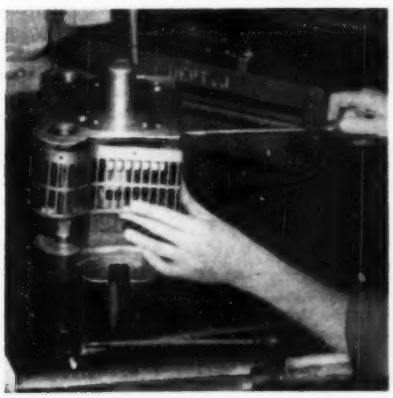

Fig. 3. Here upper fence is matched to slide inside lower fence. No nip points will be exposed at the top of the press stroke.

Lineman's Glove Standard

NEW specifications for rubber insulating gloves have been approved as American Standard through the procedures of the American Standards Association. Representing a long-awaited revision of ASA No. C59.12-1942, they recognize that rubber gloves are being used on higher line voltages and provide for three classes of gloves differentiated by ranges of minimum wall thicknesses from about 35 mils to 60 mils, and by proof test voltages of 10,000 volts, 15,000 volts and 20,000 volts respectively. Tensile strength required of the rubber in the new gloves has been raised from 1800 psi to 2500 psi with no relaxation in the requirements for elasticity. The new thickness limits require greater uniformity than formerly.

These rubber insulating gloves are worn by electrical workers, usually with an outer pair of leather protector gloves to avoid mechanical injury to the rubber, to protect the men against electric shock as they handle energized conductors and equipment.

The document explains that "the proof test voltage referred to in these specifications should not be construed to mean the safe voltage on which the gloves can be used." The gloves constitute the linemen's "first line of defense" but their safety depends on many factors other than the gloves. The specifications therefore do not state the maximum line voltage or voltage-to-ground of the line on which it would be safe to use the gloves. Other factors, according to Gordon Thompson, chairman of the ASA committee which developed the standard, include: supplementary rubber protective equipment; physical position of the worker with respect to other live surfaces; the policy and practices of his company; and primarily his own watchfulness and carefulness. The committee preferred to use the proof test voltage as the means for classifying the insulation level of the gloves.

Joint sponsors of the ASA project on Rubber Protective Equipment for Electrical Workers are the American Society for Testing Materials and the Edison Electric Institute.

This same sectional committee has previously developed specifications for rubber protective equipment for line hose, hoods, blankets, and sleeves. A specification for leather protector gloves is now undergoing letter ballot. Specifications for other related equipment are in preparation.

Copies of the American Standard Specifications for Rubber Insulating Gloves, J6.6-1952, are available from the American Standards Association, 70 East 45 Street, New York 17, N. Y., at 25 cents per copy. The other protective equipment specifications, referred to above, are contained in a single document available at 50 cents a copy.

Do You Have A Ladder Problem?

ARE your ladder requirements the same as those in the plant across the street? In all probability they are similar but not exactly the same. There may be jobs that have to be done that require a heavier than usual ladder. It's just such an occasional job done with improper equipment that often spoils a safety record.

Just as no one wrench, drill press, unit heater or compressor can be used for every application in a plant calling for such a piece of equipment, no one ladder can be safely used, without proper selection for the job to be done.

Obviously, too light a ladder for a heavy duty job is a poor risk and is often a contributing factor to accidents. By the same token, too heavy a ladder for light duty work slows down the person using it, reduces his efficiency and increases his fatigue causing him to be more accident prone than if he had the proper ladder for the job.

To assist you in selecting ladders, the American Ladder Institute, 666 Lake Shore Drive, Chicago, Ill., has prepared a pamphlet entitled: "There's a Right Ladder for every Job." This digest of things one should know about ladders with suggestions for their proper use and care is available upon request at no charge from the Institute.

What's New?
See pages 71–74

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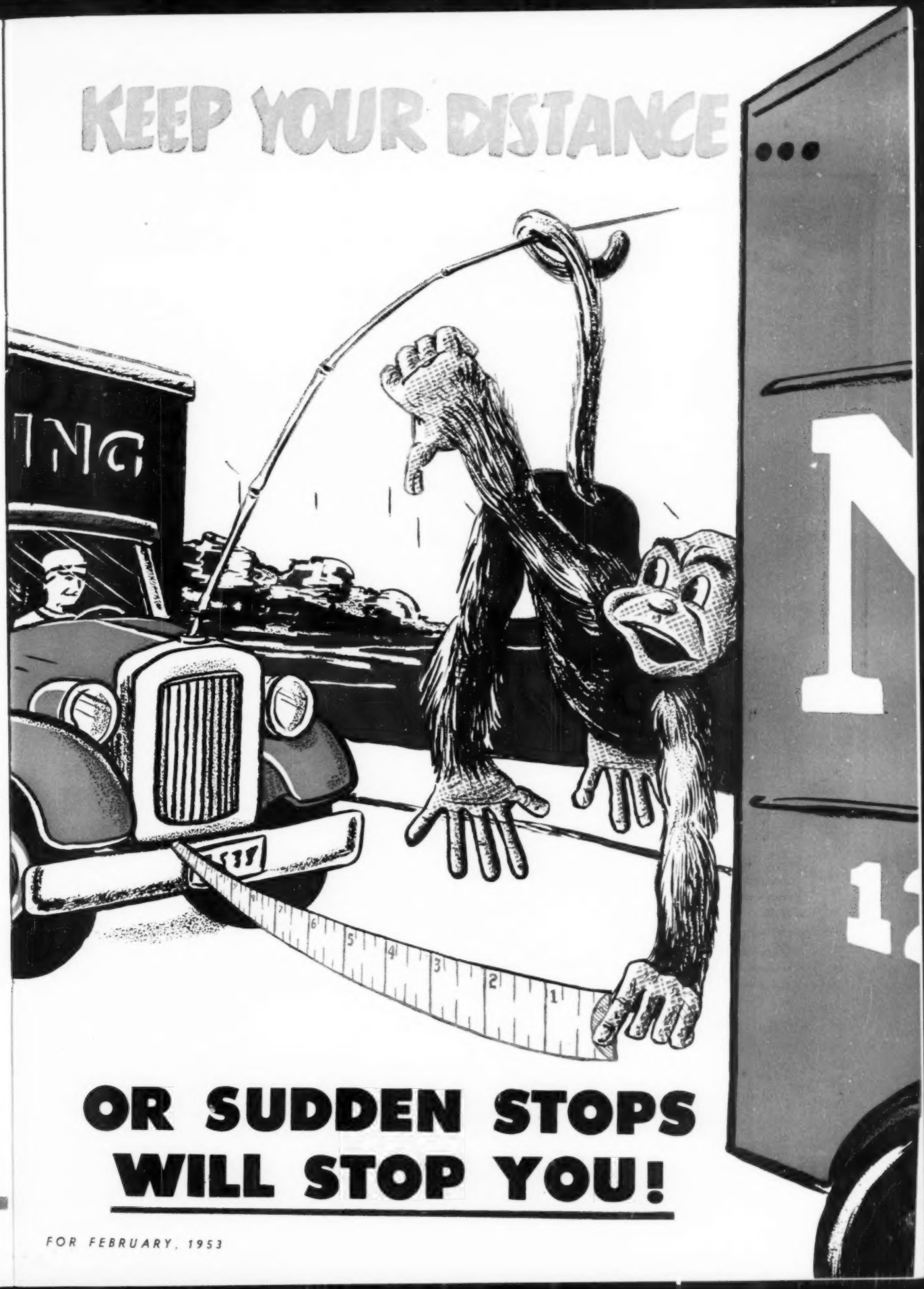

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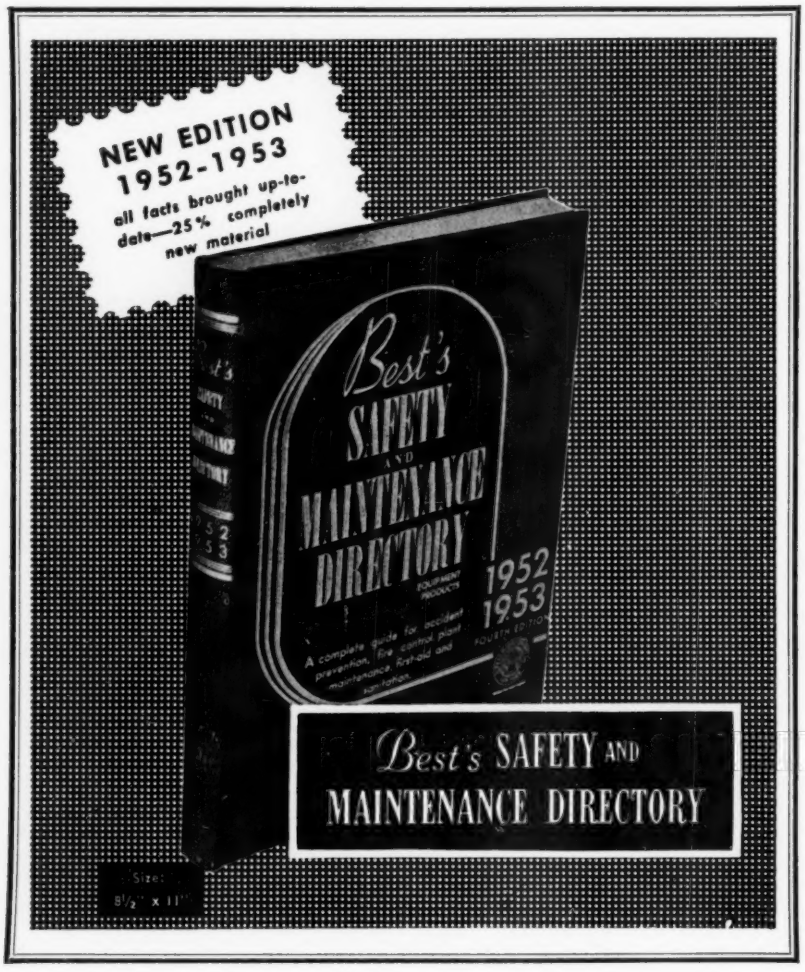

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Television In Industry

TELEVISION is reaching steel plants, railroad freight yards and other industrial locations but not with wrestling or variety shows. According to "Steelways," magazine of American Iron and Steel Institute, industrial television does a job of informing, rather than of entertaining.

In a busy steel mill at Canton, Ohio, an operator sits in a room before a panel of buttons that control conveyors carrying steel tubes through two annealing furnaces. His job is to keep tubes piled three or four high in the furnaces. The hitch is that he has to be able to look into the furnaces, and they're 100 feet distant and facing away from him.

The solution? Television. A camera looks into each furnace and reports what it sees on a screen in front of him. By flipping a selector switch he can look inside either furnace on what amounts to his own network hookup.

New Uses

Closed circuit television is finding new uses in industry all the time. In Chicago an electric generating company keeps continuous tabs on its four smokestacks by television. When it rains the furnace firing crews turn on a remote control windshield wiper to keep the camera lens clear.

Medical schools are using color television to pipe close-up pictures of operations to large groups of students. An engineering firm has a television camera in a rocket firing pit. The Argonne National Laboratory uses a three-dimensional television set to enable scientists to work with radioactive materials at a safe distance.

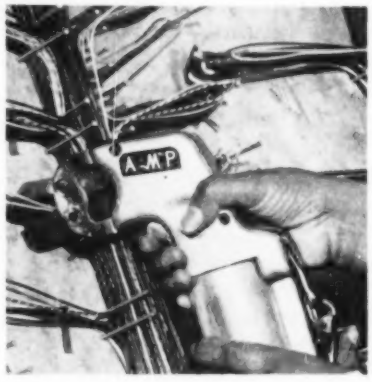
A battery of four cameras and receivers in a steel mill at Geneva, Utah, enables one man to feed 4-ton steel slabs into 3 reheating furnaces at once. At a railroad freight depot, a yard clerk jots down freight car numbers comfortably in his office from a television screen.

SAFETY MAINTENANCE & PRODUCTION Salutes a Safety Idea for FEBRUARY

IT IS the practice of this magazine to salute only a single safety idea each month. However, this month the Harrison New Jersey Works of the Otis Elevator Company has come up with two safety ideas that play an important part in the plant's fine accident-reduction record. So, we have made an exception. It is the kind of exception we like to make.

The picture at the top not only displays a safety idea, but makes a very important point—cooperation for safety. It shows the plant safety engineer and foreman who developed the safety device *in collaboration*. The problem faced was to design an attachment for a three-legged sling to facilitate the movement of sheaves from the floor to the table of a machine for work and from the table to a skid for shipping. The men developed a device which would hold both the sheave and the plane in which it was to be machined as they were lifted to the table.

In the right-hand picture the safe operation of a pneumatic machine for cutting wires is shown. The problem in this case was to guard the cutters so that the operator



would not cut off his or her fingers. Here again, the foreman working *in collaboration* with the safety engineer developed an attachment that requires the operator to use both hands to operate the tool, keeping fingers away from the exposed cutter.

Pictures by courtesy of Otis Elevator Co.

How Do You Get Them To Use Protective Equipment?

(Continued from page 12)

check respiratory safety devices. The Bureau of Mines' approval attests only to the efficiency of the equipment. The safety engineer still will have to select the most comfortable, lightest in weight, easiest and safest to wear, without forgetting that appearance and attractiveness play a part in getting employees to wear the equipment.

To get people to use protective equipment it is necessary to understand the problem for which the protective equipment is to be selected. In selecting the equipment efficiency, comfort, size, weight, practicability, attractiveness and service must be considered. The need for using the equipment must be patiently, clearly and intelligently explained to the worker. You must, through study and actual trial, be convinced that the equipment is the best answer to your problem. If you have tried these methods but still are not getting results, it is a good idea to seek the help of one or all of the agencies I have mentioned.

From an address delivered at the 22nd Annual New York Safety Convention.

This bad break is dangerous and costly. Hand trucks are upset or stalled and loads damaged. Loss of time and labor—or loss of merchandise results. Resurfacing is the solution.

NEW LIFE FOR OLD FLOORS

WORN OUT FLOORS

The break or hole is swept clean. No grease must exist on the spot repaired.

The surface is primed with a bonding agent. Rough spots require two primings.

Can be quickly and easily resurfaced or

BY WALTER R. WAKEFIELD
Building Materials Division
A. C. Horn Company, Inc.
Long Island City, N. Y.

FLOORS subjected to heavy traffic loads, to movement of heavy trucks, to rolling of steel drums or dropping of heavy objects will ultimately crack, develop holes and disintegrate. This creates a serious safety hazard.

Injuries to personnel, resulting in extended loss of time and payment of heavy compensation claims can come from neglecting to correct such conditions. Production, particularly movement of materials or finished products, is retarded when such conditions are allowed to exist. Losses in merchandise spilled when trucks dip into ruts or breaks frequently exceed the small cost of repairs. Management often allows such conditions to exist because they are considered major repairs that can only be made when the plant is shut down for a week or two.

Many panaceas have been offered to repair broken or worn out floors but most have failed, either through lack of permanence or because they involved extensive labor and complicated mixes of materials. In some cases whole sections in which the damage occurred had to be broken out and a new slab poured. Such correction involves great expense and loss of use of the area, frequently causing shut-downs of sections of a manufacturing plant and resulting in retarded or complete loss of production of the entire plant.

Methods and materials have been developed which involve less loss of production time and inconvenience.

For detailed descriptions of floor maintenance products see pages 321–345 of "Best's Safety and Maintenance Directory" 1952–53 edition.

FEATURE

This is the first of three feature articles concerned with Flooring Maintenance. The next two articles will appear in the March and April issues of SAFETY MAINTENANCE & PRODUCTION.

patched for . . . SAFE, EFFICIENT PLANT OPERATION

These involve chipping out sections of a floor beyond where the damage occurred and applying a topping of new concrete. Fifty percent of the cost of such a method is required for the labor of chipping out the old floor, over 13 percent for sand and cement and nearly 37 percent for the labor of laying the topping. Permanency is often lacking in such repairs because of improper bonding of the topping to the chipped-out floor and because of inability of the mason to conceive a mix of the ingredients that would give proper resistance to the heavy traffic when the floor is again in use.

Admixtures are available for use with sand and cement that permit mere cleaning of the affected area; treating with a special bonding agent and then applying the patching mix. The cost of chipping is eliminated but, the human element remains and with it, the problem of accurate proportioning of the ingredients. There is also the cost of cement and sand in addition to the cost of the special additive.

Ready-to-Use Material

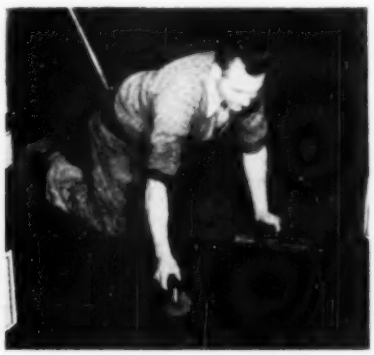
Many years of research now result in a topping that eliminates procurement, proportioning and mixing of the ingredients. It is a prepared, ready-to-use material. No longer need such patching operations be put off until after an accident has happened.

With this new method the material may be taken from the shipping container and wood-floated into cracks, ruts, depressions or breaks in the floor, steel troweled to a smooth surface and feather edged to the firm floor beyond the break. The repaired area may be opened to light traffic the next day—to heavy traffic the second day. The permanency of this type of patching is indicated by extensive use in many heavy industries. The cost of labor and materials are greatly reduced. Repaired areas provide sufficient resiliency to absorb the shock of steel-wheeled trucks; and, if the repairing material is applied immediately after the first sign of a break or of disintegration of the floor, extensive, costly resurfacing may be avoided.

This type of patching material may be applied as a resurfacing to entire areas where continued trucking has caused disintegration of the floor. Its application will reduce the noise of steel wheels, eliminate dusting and speed up the movement of trucks over the areas.

Use of this new type of patching is not confined to concrete floors. It can be applied effectively over brick, tile or other floor surface if the under structure is sound. It may be used effectively for patching or resurfacing exterior sidewalks, ramps, loading platforms and driveways.

Mix resurfacer thoroughly. With a wood float work mix in roughly level to floor.



When resurfacer has set up enough to hold kneeboard steel trowel to a level surface.

Pictures b Courtesy of A. C. Horn Company, Inc.

New surface may be opened to light traffic within 24 hours.

Safety Views

(Continued from page 16)

D. McRae, of Ontario-Minnesota Pulp and Paper Co., Ltd. He insisted that workmen's compensation is not charity, but an organized attempt to care socially for the burden which industrial accidents has placed upon people employed in the modern age of high speed and extensive production, who risk death or injury by reason of that employment.

Ontario compensation has risen from less than $1 million for some 17 thousand accidents in 1915 to $25 million for just over 200 thousand accidents last year. A new feature of the Canadian program is a convalescent center, 14 miles from Toronto.

Foremen to the fore was the advice to management wanting effective safety training in plants given by G. W. E. Nicholson, vice-president in charge of manufacture for the Union Bag and Paper Co., New York. He told the Pulp and Paper section that success in any plant's safety program largely depends upon the foremen.

"There are plenty of good foremen in American industry and those are the men we must depend upon to train other men to observe safe working habits," Mr. Nicholson said. He pointed out that management can gain the most safety progress through training men, because most industrial accidents are caused by man-failure. The key link in such training is the foreman. He told delegates that foreman safety-mindedness is important because the foreman always is close to the men working for him. It thus is easier for the foreman than for higher officials to get across safety training.

Mining

Rockbursts—a deep-mining phenomena comparable to modern artillery warfare, occurring in the copper country of Michigan's upper peninsula—were described to the Congress by Colin A. Campbell, manager of mines, and George Gedge, safety director of the Calumet & Hecla Consolidated Copper Co., Calumet, Mich.

G. I.'s who fought in the Hurtgen Forest, where a dread danger was the splintering treeburst caused by artillery, probably have the closest conception of the rockburst danger. At one mine, 7 thousand feet down, rockbursts are now being experienced in all sections of the mine. Most frequent are the small bursts, which throw several rocks without warning at high velocity. But of almost atomic proportions are the large bursts, which may throw as much as 20 tons of rock with shattering impact.

Even encased in armor, miners would have little chance against the small burst, and in the case of the giant rock explosions, no possible protection could save a human in their path, according to the two mining experts. They expressed little hope of stopping the rockbursts.

"It would be impossible to stop rockbursts except by leaving approximately 50 percent of the ground in place. In our case this would be completely unprofitable and would mean closing of the mine," Mr. Campbell stated. "Nature's artillery" is yet to be conquered by man's ingenuity and science, he added.

Underground Fires

Results of a 5 year study of mine fires to avert future tragedies, were explained to the Congress by E. W. Felegy, U. S. Bureau of Mines, Duluth, Minn., and C. M. Fellman, Montreal Mining Co., Montreal, Wis. The study was conducted in the Lake Superior district iron mines.

"The possibility of great loss of life, and the more certain probability of staggering costs and loss of production, make underground mine fires a nightmare to operating personnel," said Mr. Felegy, who is regional chief of the accident prevention and health division of the Bureau of Mines. Although 4 open-pit fires cost the Lake Superior district a third of a million dollars in property loss, there were 57 underground fires reported in the same 5 year period. For this reason the underground blazes were the only ones to receive attention.

Electricity—which has modernized and simplified U. S. mining—is also the villain in the case. The two experts disclosed that 73 percent of the underground fires were due to electricity, welding and cutting. The last two were responsible for only 20 percent.

"We can't do without electricity. But sometimes we don't seem to know how to handle it. We'd better learn how!", the speakers told the safety delegates. Although underground unrestricted smoking is very hazardous, smoking caused only 3 percent of the fires reported. Improved ventilation and modern fire doors which seal off blazes before they get out of control were praised, as were skilled rescue teams and improved water lines. Newest and best technique for extinguishing sealed mine fires uses the same ingredient that makes dry ice—carbon dioxide. Carried in liquid form it is discharged to create gas which smothers flames.

Cold facts on a hot subject—mine fires—were recounted to the Congress by P. F. Yopes, of Seattle, Wash., a mining engineer with the U. S. Bureau of Mines. He told the Mining section that 20 companies are now manufacturing fire-retarding compounds which make wood and other combustible materials virtually fire-resistant. The compounds, which are usually painted or sprayed on, prevent formation of flammable gases on combustible materials, or prevent such gases from mixing with oxygen in the air to cause burning. The five principal types now on the market vary greatly in effectiveness, durability and appearance, he said.

How Canadian-American "good neighborliness" has paid safety dividends was described to the Congress by D. F. Cooper, Ontario inspector of mines. He told Mining section how U. S. mine rescue aid

(Continued on page 31)

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Dependable Respiratory Protection

Because Willson safety equipment is made after careful study of industry's needs, you get all the comfort and safety improvements *first* in Willson products. The complete Willson line of safety equipment includes more than a hundred face, eye and respiratory products for industry, farm and home—the most complete selection of safety equipment—and you can get them anywhere!

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WILLSON RESPIRATORS

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SAFETY SPECTACLES

WILLSON RESPIRATORS

Wearer safety and wearer comfort are the two primary considerations in designing and making Willson respirators. Styles are available to protect against metal fumes, mists, gasses, vapors and all dusts. Most styles bear U. S. Bureau of Mines approval.

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(For full details, use Key # B-13 on free Inquiry Card on page 75)

THIS WAY TO SAFETY!

Wearing goggles or safety glasses may not enhance your looks, but it does safeguard your vision. Make a spectacle of yourself at work—and at least be able to look back at the memory afterwards—and see it.

Protective clothing provided for certain jobs may not always be the height of fashion—but it does assure the peak of protection. And it stands up much better, under strains and stresses than you do.

ETERNAL vigilance is the price not only of liberty but also of safety for the worker on the job. Constantly stressing this to employees is a major part of the safety programs carried on at most industrial plants.

Pictures on these pages were specially posed and used by Grumman Aircraft Engineering Corporation, Bethpage, N. Y. in one such reminder. None of the situations involved are new, nor need they be. Warnings against the commonest and simplest hazards can bear almost endless repetition.

By and large, these situations represent accident possibilities present in the vast majority of industrial establishments, and should be equally effective reminders to wage-earners everywhere, according to New York State "Industrial Bulletin."

Statistics on man-hours lost per month through accidents are important, but they haven't much personal interest to most workers. But the suffering, inconvenience, temporary or sometimes even permanent loss of earning power resulting from an injury has real meaning to the individual worker.

Reminders to workers that when they get hurt their wives and children are also deeply hurt by being deprived of the necessities which a salary provides are appeals to which wage-earners have proven most responsive.

Emphasis on the more personal aspects of industrial accidents, and the importance of being always alert, is an effective approach in accident prevention campaigns.

What safety men must get across to every employee is that safety is not a burden which may help stop something that usually happens to someone else. But it is real protection against real suffering and actual money loss.

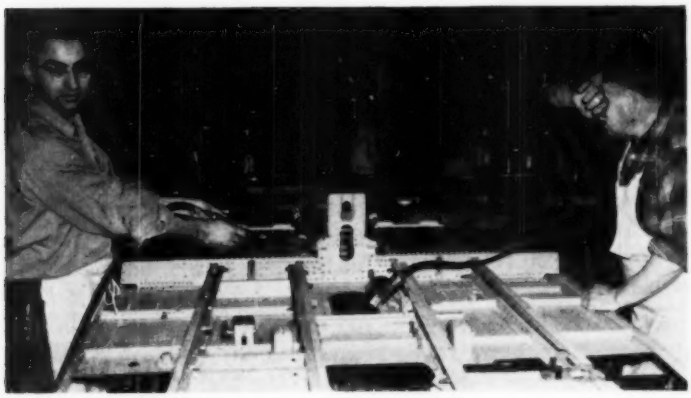
It's fine to put yourself into your work—but not finger by finger. That's doing it the hard—and painful—way. Keep your fingers and hands clear of machinery and you can put yourself into your job without fear. The man in this photograph is risking the loss of his thumb and when that's gone he may learn—or he may use his index-finger. If he loses that—he'd better learn safety—for he'll have only three fingers left.

That bandaged foot in this picture soon may be reinjured—badly. Safety shoes probably would have prevented the injury in the first place—and besides that—they're more comfortable. Don't let the weight of the job fall on your toes—they weren't made for it.

THIS WAY TO INJURY!

You can stretch things too far as this worker is demonstrating. One slip—and down comes Humpty Dumpty—to a sudden fall. Better to move the ladder over first and come down to earth in safety.

Eyes are designed to see with, not to be dust-catchers. But they can become dust-catchers easily enough—through careless or unnecessary use of air-hoses, as demonstrated above. Use brushes when possible—you're likely to keep your eyes.



Leading industrial doctors advise immediate washing with plenty of running water as the best first aid treatment for any chemical in the eyes. Records prove that washing with water for ten minutes or more, close to the accident, is necessary to reduce or eliminate eye damage.

Forehead operation leaves hands free to open eyelids so water can be directed wherever chemicals might be lodged. Sanitary white baked enamel bowl is resistant to most fumes.

Over 500 industrial plant installations have been made to date.

Write For Details.

VALVE
Chain Operated
Quick Action
Self-Closing

NEW EMERGENCY SHOWER

The B & A Shower is the quickest and most satisfactory way to saturate a worker with gallons of water the instant an accident occurs, to prevent a disfiguring burn—even a fatality.

Special shower head, no holes to clog—can be used where unfiltered water prevails.

Write For Details.

GLASS SLIVERS AND CHEMICAL IN EYES!
DISFIGURING FACIAL CUTS AND BURNS!
CUTS AND CHEMICAL BURNS ON ARMS AND BODY!
THIS HAPPENS WHEN UNPROTECTED GLASS BOTTLES ARE BUMPED
NEW LOW COST B & A SAF-T-BAGS
5 PINT
1 GALLON
5 GALLON

are widely used for the safe handling of glass bottles containing harmful chemicals; also the storage and recovery of expensive serums, biologicals, and other costly products.

Painful cuts, disfiguring burns, loss of eyesight, or even a fatality, do result from corrosive liquid splash and flying glass when unprotected bottles shatter.

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(Use Key # B-14 on Inquiry Card on page 75)

ACROSS MANAGEMENT'S DESK

Off-Job Accident Prevention Next Industry Program

INTEGRATION of an off-the-job safety program with regular plant campaigns to reduce at-work accidents is the next big step for companies that want to cut absenteeism and operating costs.

"Twice as many accidents to industrial workers occur off-the-job," said Floyd E. Frazier, director of the industrial division of a leading insurance organization. "In some factories it runs more than 10 to one."

Seven out of eight companies asked said they would like to do something about off-the-job safety, but qualified their answers with three big "ifs": *If* they had a practical plan, *if* it didn't take too much time from work, and *if* it wouldn't arouse employee resentment.

"Many companies said workers might feel management was trying to pry into their private lives," he said. "Others felt off-the-job safety was too intangible, that it's almost impossible to control actions during leisure time. A third question was what specific steps could be taken and how results could be measured."

The dire need for off-the-job safety campaigns, however, is underlined by National Safety Council figures for 1951, which showed 16,000 workers killed on-the-job and another 33,000 deaths away from work.

One company, with 3,000 employees, reported 1,044 days of absenteeism during 1951 from off-the-job accidents, Frazier said, yet only 98½ days were lost because of on-the-job accidents. And, the company counted only those off-the-job accidents involving an absence of more than 14 days.

Off-the-job safety programs can work and are available, Frazier said. The seven basic rules for a successful program are:

1. Strong management support.
2. Responsibility for the program clearly assigned.
3. Continuity, not casual and sporadic efforts, is the key to success.
4. The program must be interesting, and "live."
5. The program must be practical and specific, not just admonishments not to get hurt while away from the plant.
6. There must be plenty of family appeal, to penetrate into homes.
7. Facts about off-the-job accidents are a "must." The bare minimum is a simple procedure to investigate and report on off-the-job accidents.

Eliminate Fools For Fool-Proof Operation

WE WILL not create an accident-free, loss-free economy as long as there is room for loss by human failure. More bluntly, we cannot have a fool-proof operation without eliminating fools."

That terse summation of industrial accidents was expressed by Hubert W. Yount, vice president of a leading insurance company at a "Conference on Future Risk" called by a group of the nation's fire and casualty insurance companies.

The human element, Mr. Yount said, will continue to be the prime factor in accidents of all types, industrial or personal. Changes in materials, machines and methods are not the principal source of the problem.

"Our basic problem arises from the fact that science and its industrial and commercial application continues to develop more rapidly than the ability of our population to adapt itself to change," he said. Industrial accidents, he added, can be reduced by sound engineering and management. Push-button factories and the elimination of loss from accidents by substituting power and machines for men, however, will

not have any major effect in the total industrial effort.

"Machines must still be made, installed, manned, supplied and maintained by men," he concluded. "Except for very limited areas of operation, push-button industrial production is in about the same category as push-button war."

Safety Views

(Continued from page 26)

in 1928 provided the stimulus for a whole new development in Canadian mine safety.

Ontario had no mine rescue program a quarter-century ago," because most mine operators did not believe that underground fires could possibly happen at their mines," Mr. Cooper said. But, he added, "a rude awakening took place in 1928, when 39 men were fatally asphyxiated in an underground fire at the Hollinger gold mine in the Porcupine district. Since there was no equipment suitable for mine rescue work in Ontario, the U. S. Bureau of Mines sent a special train with trained men and equipment to recover the bodies."

Since then, he stated, 17 rescue stations have been developed in Ontario. A well-coordinated program, modeled after U. S. Bureau of Mines standards and techniques, has been inaugurated.

Childbirth was one of the hazards of mining in Malaya described to the Congress by Canadian mining engineer, R. F. A. Thew. He brought out marked contrasts in mining safety at the Steep Rock Iron Mines, Ltd., in Ontario, his present employer, as against open-pit operations using untrained native labor in the Malay Peninsula. Because women are almost as commonly employed as men in Malayan mining, Thew said, it was not too uncommon to halt work while a baby was delivered.

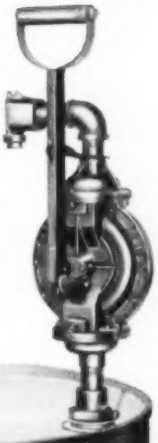
But the principal difference, he suggested, lies in the attitude of the miners.

"Bareskinned, bareheaded, barefooted and barehanded, they persist in operating dangerous heavy mining equipment with almost complete disregard for life and limb. Their

Every day more and more factory men tell us —

Tokheim hand pumps are safer, faster, more useful!

This new Tokheim double-action hand pump has no equal for speedy, safe handling of liquids. Delivers 20 gallons per minute of most fluids. Stops wasteful dripping and slippery floors. Reduces fire hazard and accidents common to other methods of transfer. With optional diaphragm and body, it handles a wide variety of products. Compare list below with your own needs. UL-approved for petroleum liquids. Available in hose and spout models—for drums, skid tanks and underground installations. Call your dealer, your Tokheim representative, or write the factory for literature.



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mental and physical agility is the greatest substitute for the mechanical safeguards we try to impose," he concluded.

Workers at the Phelps Dodge Corp., Ajo, Ariz., write their own safety rules according to James W. Brykit, smelter superintendent. He described to the Mining section the safety codes used by the firm. Whenever feasible, the codes are drawn up by the employees because they are most familiar with the jobs, he said. He described the codes as successful devices for teaching safety to workers, and added that inauguration of the codes was followed by a drop in the accident rate.

"Experience has shown that well-informed employees are the safest workers and operations well-covered by safety codes have enjoyed improved safety records," Mr. Brykit declared.

The Mining section also heard how workers in a Canadian mine labored under a high eye accident rate until the company instituted a goggle-wearing program. The firm had to make the scheme compulsory because workmen of their own accord would not use goggles, even when provided by the company. I. H. Sloane, safety director for Canadian Johns-Manville Co., Ltd., Asbestos, Que., told delegates a universal compulsory goggle-wearing program in a mine can be enforced successfully.

"We found that, although men are supplied with goggles, a direct order by the foreman or safety engineer is necessary to overcome the human inertia of putting on the goggles," he said. Mr. Sloane stressed that employees must be fitted properly with a goggle tested in the mine. Union cooperation also is essential, he added.

John W. Warren, chief ventilation and industrial hygiene engineer for Anaconda Copper Mining Co., Butte, Mont., described to the Mining Section the methods the company uses to make the air in its mines clean, cool and safe.

"Air-conditioning plays a major part in the underground environmental control within several areas of the Butte district," he said. "Air-conditioning plants deliver refrigeration in the heart of the working areas."

Dust control also is a vital part of mine environment control, he declared. Special equipment is used to draw dangerous dust from the air.

Mr. Warren reported the firm stresses the value of keeping a continuous strong airflow through the mines. At present, he said, the quantity of air circulated through the mines in one minute is enough to sustain a human being from birth until he reaches 21.

Gas Hazards

Coal mining has always been one of the most hazardous of basic industries," Harold V. Richmond, Illinois state mine inspector, told the Congress.

"Although almost all authorities agree that both Illinois and Federal mining law can be implemented for more safety, enactment of new laws and new safety standards cannot alone answer the problem. All parties must work toward greater safety if it is to be achieved," he said.

He discussed the advisability of sealing off abandoned mines to reduce gas hazards. He cited 3 mines, some in operation since 1904, which have taken upwards of 70 million tons of coal from the seam—or as much as 11 thousand tons daily, on one shift, from a single mine. These operations would have been impossible, in the case of two older mines, without sealing off several thousand acres of abandoned diggings. But in the case of the 11 thousand ton daily producer, ventilation was more than adequate with only one fan. In the Central Illinois field, it seems highly advisable to seal off abandoned works, Mr. Richmond said.

Power-Press & Forging

You can't scare men into working safely, the Power Press and Forging Section of the Congress was told.

"It's hard for most industrial workers to realize that the guy who just lost a finger on a grinder might just as well have been them," said F. J. LaPratt, general foreman for the Oldsmobile division of General Motors.

"Workers have remarkable sales resistance for the fear psychology approach to safety promotion. Very few people pick out and pay for their own caskets. They even overlook the fact that some day they will need a casket. So don't try and sell fear psychology. Give your men an example of where safety paid off—a pair of goggles that saved an eye! A dented hard-hat that saved a man's life when struck by a falling object!"

Mr. LaPratt added that foremen are the "indispensable, absolute key for effective industrial accident prevention."

Max Leyrer, maintenance supervisor of the Lindell Drop Forge Co., Lansing, Mich., told the Congress: "Where good housekeeping is practiced, you will find fewer hazards."

Cleanliness and neatness are essential to safe working conditions, said Mr. Leyrer, particularly in the maintenance department. He pointed out ways and means to provide the good housekeeping so essential to safety for maintenance personnel as well as all other workers.

Textile

The most important thing to realize about accident prevention is that it is not a separate subject, but part of the word production, the Congress was told by Thomas L. Carroll, of Charlotte, N. C. Speaking to the Textile Section, the assistant to the executive vice-president of the National Cotton Council expressed it this way:

"When we serve the cause of safety, we are serving the larger cause of the free way of life, for accident prevention is an integral part of the larger subject of American productivity. The world has never seen anything like our meshing of the forces of management, manpower and machines. This has resulted in production which has made our nation great in peace and war. If there is conflict between management and *(Continued page 35)*

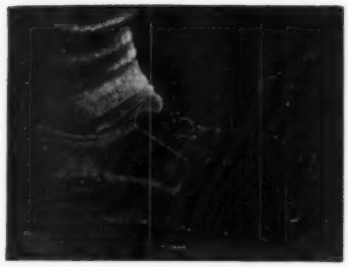

Fig. 1. Canvas upper keeps man on job despite foot injury. Guard prevents reinjury.

Fig. 2. Illustration shows wooden sole shoe combined with an acid-resistant upper.

Fig. 3. Cutaway shows extra protection of built-in steel toe cap on wooden sole shoe.

Fig. 4. Corrugated steel guard attached to wooden sole shoe protects instep and toes.

Do you know the SPECIAL safety contribution made by

WOODEN SOLE SHOES

FEATURE

This is the third of three feature articles on Foot Protection. The first two articles, dealing with new developments in safety shoes and rubber footwear, appeared respectively in the December and January issues of SAFETY MAINTENANCE & PRODUCTION.

M. G. REECE
Reece Wooden Sole Shoe Co.
Columbus, Nebraska

AT THE mention of wood in shoes, many people picture Dutch maids in spotless aprons and starched caps wearing their picturesque wooden footwear. Others recall having seen creamery workers in this country wearing wooden soled shoes.

There is a connection between these two reactions and it is no coincidence. The great-great-grandfather of the present day wooden sole shoe with leather uppers originated centuries ago in the dairy countries of northern Europe. It kept feet dry and protected against rheumatism and colds.

When people from these countries emigrated to America they naturally turned to dairying, and—just as naturally—wore their wooden shoes to protect against dampness. The idea spread and at the beginning of the twentieth century wooden sole shoes were in use

For detailed descriptions of footwear and protective equipment see pages 222–242 of "Best's Safety & Maintenance Directory" 1952–53 edition.

SEE PAGE 17

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principally in creameries, dairies, cheese factories, breweries and packing houses, where dampness was a particular hazard.

The past fifty years brought many changes—new industries, new jobs, and—new hazards. The latter, in turn, made the safety movement a vital part of the industrial scene. With the increase in hazards and the growth of measures to combat them, wooden soled shoes have found new safety uses in industry, beyond those of protecting the wearer from water and dampness.

Heat & Cold

Wood is a non-conductor. All you have to do to check this fact is to take hold of the wooden handle of a boiling tea kettle or a steaming coffee pot. If the handle conducted heat your hand would be burned. This simple property of wood gives it a special value as a safety sole. It adequately protects the feet from burns even under extreme heat. For this reason, wooden sole shoes are now worn around coke ovens and in steel mills.

Packing houses have just the reverse hazard in their salt and hide cellars. There, penetrating cold is combined with the corrosive action of the salt and brine. Wooden sole shoes with full felt lining are used to keep feet at body temperature.

Chemical Hazards

Wooden soles are now combined with other safety features to produce a shoe which protects the foot against many industrial hazards.

One of the latest types of wooden sole shoes has been produced to meet the need for a sandal which could be used as a splint for an injured toe. A wooden sole shoe with a canvas upper adjustable to different size bandages has been developed which permits workers to stay on the job even with injured feet. To prevent further injury a steel guard can be attached. (See Fig. 1.)

Many chemicals and dyes deteriorate leather uppers but have little effect on the wood soles. A wooden sole shoe with acid-proof neoprene uppers has been devised to protect the foot from acid burns and dangerous chemicals. (See Fig. 2.)

Steel Toes & Guards

Since a large percentage of all foot accidents are injuries to one or more toes, most safety shoes require steel toe caps. Wooden sole shoes are now provided with this protection. (See Fig. 3.)

Some jobs require even greater protection than the steel toe cap affords. Wooden sole shoes can now be procured with an extra guard attached which covers and protects the instep as well as the toes. It also protects against hot sand and boiling liquids. (See Fig. 4.)

Puncture Hazards

Wooden soles are also good protection against foot punctures from sharp objects. For work around

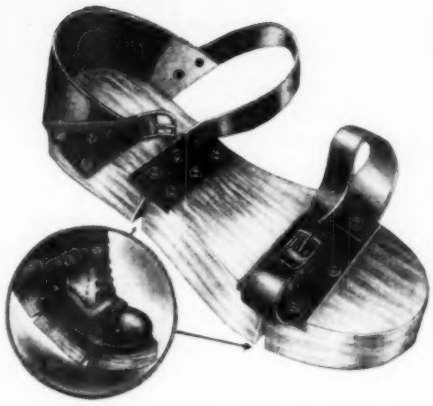

Fig. 5. Flexible wooden sandal strapped on shoe to protect against heat and punctures.

scrap piles, incinerators, on asphalt paving or for cleaning out hot ovens or furnaces, a wooden sole sandal which straps on over work-shoes is now available. (See Fig. 5.)

For protection against athlete's foot and other skin infections wooden sole shower sandals are very valuable. They keep the foot off the watery floors of shower and locker rooms where fungus most often exists.

With its many adaptations and new uses, today's wooden sole shoe makes a very individual and important contribution to industrial safety.

Pictures by courtesy of Reece Wooden Sole Shoe Co.

Safety Views

(From page 32) manpower, the shock moves these gears apart. We see the machine either shut down or lose efficiency. When the shock moves down it produces carelessness between the man and his machine. Then production drops to a low position and everybody suffers. But by and large, management and manpower have harmonized in good relations. It follows that the man and his machine meet in safe practices, and the productive result is high."

Industrial safety not only "pays dividends in dollars and cents, but in a clear conscience," according to A. H. Zeilinger, superintendent of safety of the Colorado Fuel and Iron Corp., Pueblo, Colo. He reminded the Textile Section that the only safety effort 50 years ago was "passing the hat to help the widow and orphans."

"Today, some industries have an accident frequency rate only a twentieth or thirtieth of what it used to be, but we shall not boast and we dare not stop. The job is only half done," Zeilinger said, "because men and women are still getting hurt."

Referring to "teamwork," the speaker said that management has the moral and legal responsibility for industrial safety, but the worker must think of his own welfare, and that of his family. When an accident stops the experienced worker, it also takes from production the machines, tools, materials and the time of other dependent workers. Everybody—management, labor, union and supervision—must have a share in "the mighty important job of accident prevention."

"I have always found it more important to get cooperative teamwork than to worry about responsibility and place blame. Everybody must be a member of the safety team," Zeilinger stated.

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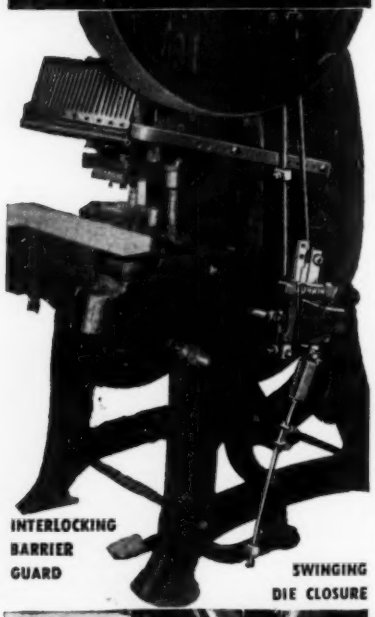

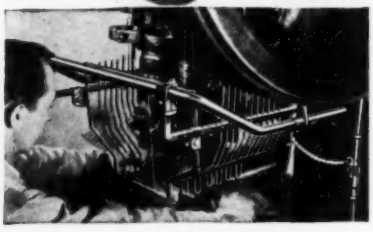

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men "darned fools" and escaped without disabling injuries. As a matter of fact, the words brought hardly a ripple of dissent in the Food Section of the Congress. George H. Steel, a veteran safety director for the Ralston Purina Co., St. Louis, Mo., used the phrase, he said, "because too many of us look upon safety and safety training as separate functions, when in my opinion they are the same thing."

A new twist in the saving of lives and limbs was injected by Mr. Steel. He explained that a six-week safety campaign, featuring talks by foremen to their workers, was popularized by gifts of cigarette lighters and radios. The foremen got the gifts if they did a good job in convincing men to save their lives and bodies from unnecessary accidents.

Construction

Loss of 40 thousand years of experience and training and the needless death of 25 hundred construction workers in 1951 as a result of preventable accidents was reported to the Congress.

"This human and economic tragedy in the construction industry was largely the result of indefensible carelessness," according to A. P. McIntosh, safety consultant of the Florida Industrial Commission, Tallahassee, Fla.

"Maybe it will take some supernatural phenomena to jolt us into really doing something about the seemingly hopeless job of making construction a safe game," he told the Construction Section.

Two of the most dangerous attitudes, he said, were:

"I have insurance. The insurance company can worry about my accidents."

"Accidents will happen no matter what you do."

Construction industry management by and large is failing to understand the seriousness of the accident problem and is doing nothing constructive in the way of accident control, Dale Medsker, area superintendent for the safety engineering division, southern department, National Surety Corp., Atlanta, Ga., charged before the Construction Section. He said that a recent survey by his office indicated responsibility for most accidents in the construction industry rested with management. The survey was conducted among southern construction managements themselves.

"Of the 24 accident causes developed by the survey, 17 were charged to management failure in one form or another. Of 21 suggested corrective measures, 16 were laid directly at the feet of management's desire and ability to initiate effective accident control measures," he continued. If any sizable reduction of accidents is to be achieved, Mr. Medsker added, management must recognize and accept its responsibility.

"Failure to recognize the potential cost of accidents—usually about 3 times the insurance premium paid—or to make adequate plans to control them has resulted in high accident frequency and severity rates for individual contractors and for the industry as a whole," he declared. The survey showed management holds "lack of adequate and efficient on-the-job supervision" as the greatest of accident causes. Supervision training was suggested as a solution. Listed in second place as a cause of accidents is employment of inexperienced and untrained men. Other causes noted are careless and negligent actions by employees, rushing the job, use of defective, improper, or inadequate equipment, failure to give definite safety instructions, and poor housekeeping around the job.

It was the suggestion of H. H. Hunt, safety director of the South Atlantic division, U. S. Corps of Engineers, Atlanta, Ga., to the Construction. Section that construction safety could take a cue from the old country doctor—that prescribing for a patient is not difficult if the diagnosis is correct. He said the Corps of Engineers sent a questionnaire last year to several hundred supervisors asking for the reason for a high accidental injury rate.

"In 506 written opinions sent in we got the proper diagnosis!" More than 60 percent stated that there

was a lack of knowledge or understanding of our safety policy. Even where the policy was known, about the same number said that it was not being accepted," he declared.

"Some 50 percent said that little or no effort was being made to fulfill safety responsibilities. Lack of enforcement was given as the cause of about 75 percent of our accidents. We got the correct diagnosis, and it wasn't hard then to prescribe the proper remedy. The patient wasn't completely cured—but he's much improved," Mr. Hunt concluded.

Adequate safety engineering is not only good humanitarianism, but it's also good business, the Construction Section was told by J. A. DeLuca, safety superintendent for the construction division of E. I. du Pont de Nemours and Co., Wilmington, Del. He explained that an effective safety program increases profits because it cuts needless losses.

"Preventing loss is the same as making money," he said. For one thing, "lesser loss because of lesser accidents means the basic elimination of compensation cases."

Mr. DeLuca asserted that prevention of unnecessary losses within the safety department itself also increases profits. He emphasized the value of running the department on "good business principles," such as taking advantage of discounts, assuring prompt and early delivery of equipment, and making certain only qualified personnel are hired. Personnel, too, should be "safety engineered," he said. Safety-mindedness toward things alone is only half the job.

Cement and Quarry

Safety in cement-making and quarrying can be glamorized by pictures, A. B. Hofteizer, safety supervisor of Laverack and Haines, Inc., Buffalo advised the Congress. The personalized approach to safety —pictures of "your" plant, "your" men and "your" accident hazards, is the right way to sell safety in "your" plant—he told the Cement and Quarry section.

The men who keep the machines running not only (To page 60)

"This is our last costly shutdown because of breathing hazards

. . . Order some Scott Air-Paks and get those repair jobs done in hours instead of days"

Ed: Right! The man hours we've already lost would pay for a carload of SCOTT AIR-PAKS. We can't afford to slow up production any longer just because our maintenance men don't have efficient breathing equipment.

S.D: We certainly can't. It took too long to clear out the fumes so that our men could make the repairs in safety. If we had SCOTT AIR-PAKS, our men could have gone into those fumes and finished the job in a few hours!

Ed: That's right . . . and our safety men tell me SCOTT AIR-PAKS can be put into operation on the double . . . plus the fact that they have the *lowest operating cost* of any breathing equipment.

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industrial Hygiene

ASSOCIATE EDITOR
JACOB A. GOLDBERG, A.M., Ph.D.

Safety Data on Cresols

UP-TO-DATE information on the safe handling and storage of cresols, or cresylic acids, is contained in Manual Sheet SD-48, latest in the series of chemical safety data sheets issued by the Manufacturing Chemists' Association, Inc.

As encountered in industry, cresols are a hazard principally to the eyes and skin. They are also toxic and constitute a moderate fire menace. Despite this, they can be and are handled in large quantities with safety.

The 16-page data sheet describes precautions to be observed in unloading, emptying, handling, storage and disposal of the materials. It also describes health hazards and their control.

Copies of the sheet are available at 25 cents each from the Manufacturing Chemists' Association, Inc., 246 Woodward Building, Washington 5, D. C.

Prolonged Illness of Workers

THE Research Council for Economic Security has released the First Progress Report of its nationwide Study of Prolonged Non-Occupational Illness. Defining prolonged illness as any case in excess of four consecutive weeks, the report covers the illness experience of 39,675 employees during a continuous three-month period. This number represents 10 per cent of the total group to be studied.

"The principal purpose of this report," stated Gerhard Hirschfeld, the Research Council's director, "is to indicate the kind of information which the completed study will make available. For instance, the data show that there were 9 prolonged absences per 1000 employees during the three month period. If this rate is maintained, there would be 36 prolonged absences per 1000 employees during a full year. However, the ratios should not be extended or applied arbitrarily to any other group of employees until the experiences are recorded for an entire twelve-month period for the full sample of 400,000.

"Our evaluation of prolonged illness in terms of its relationship to occupation, age, sex, income, medical facilities, employee benefit plans, type of industry, size of establishment, and geographic location will help provide us with a body of information not now available. It should prove to be of considerable interest and value to medical, educational, government, management, labor, insurance, hospital, and other community groups."

The report represents companies having from 100 to 17,000 employees. The Research Council finds that there was no marked difference in the incidence of prolonged illness among the male and female workers. The male skilled workers had a prolonged illness rate markedly higher than that of the group as a whole. Fifteen absences of more than four weeks per 1000 skilled workers were recorded.

In terms of days lost and its effect upon production, the absences of more than four weeks represented 460 work days lost per 1000 employees. Skilled workers showed 710 work days lost per 1000 skilled employees. Projected over a one-year period, work days lost among the skilled group would be 2840, or the equivalent of 12 "phantom" employees whose services would not be available to employers on account of prolonged non-occupational illness.

The Research Council found that 20 per cent of all the absences of one week or more were because of prolonged illness. Moreover, they were responsible for 56 per cent of all lost time. Female workers appear to have been absent for short periods more frequently than male workers. Prolonged absences among females were responsible for 45 per cent of all work days lost by them, as against 59 per cent among males.

Age Factor

Although half of the workers who had prolonged illness were less than 45 years old, age becomes a factor in the duration of illnesses. Among the workers who were under 55 years of age, 19.5 per cent had illnesses which caused absences of more than 13 weeks. Among those who were 55 years old or over, more than 25 per cent had illnesses which caused absences of more than 13 weeks. Half of the workers with prolonged ill-

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nesses had been with their employer 8 or more years at the time of their illness. Approximately 17 per cent had been with their employer less than 30 months, and only 10 per cent less than 18 months.

The Research Council believes that one of the most important contributions of its nationwide study of prolonged non-occupational illness will be the identification of the kinds of disabilities that cause prolonged illness. Its analysis of the 334 completely documented cases of illness of more than four weeks among the 40,000 employees revealed that the largest percentage of cases were diseases of the digestive system. Next in frequency were diseases of the respiratory system, fractures, neoplasms (malignant and benign), arthritis, and rheumatism. These five disease groups accounted for over 60 per cent of the 334 cases of prolonged illness.

Industrial Hygiene Meeting

IT IS generally conceded that health and happiness go hand in hand, and science is constantly endeavoring to advance these great human resources. More than six hundred leaders in the industries and the professions exchanged knowledge on major health problems of the manufactures at the 17th Annual Meeting of Industrial Hygiene Foundation at Mellon Institute, Pittsburgh, Pa.

At least 350 member companies of the Foundation participated in medical, engineering, chemical-toxicological, legal and joint medical-legal conferences and in the main meeting, designed particularly for management.

The General Meeting sessions were opened with an address of welcome by Dr. E. R. Weidlein, President of Mellon Institute. Immediately following Dr. Weidlein's remarks, Mr. Andrew Fletcher, Board Chairman, Industrial Hygiene Foundation, and President, St. Joseph Lead Company, reviewed the activities of the Foundation for 1952. He spoke of the growth of the Foundation as a unified force in accomplishing the goals of the industrial health program, which he defined as "the improvement of working and living conditions, including safety, for the worker and his family."

The keynote address, "The Greater Industrial Health," was given by Mr. L. R. Boulware, Vice President, Employee and Plant Community Relations Services Division, General Electric Company. He spoke of the tremendous importance of industry's contribution, through organizations such as the Foundation, to the improvement of the bodily health of the workers. Contributions to the community have come through this improvement in bodily health, and its attendant effects upon the emotional and mental well-being of citizens.

Following the keynote address a panel discussion on the medical, chemical, engineering and legal aspects of industrial health was held. Representatives of these fields outlined their respective responsibilities for the protection of the health of those employed in industrial processes.

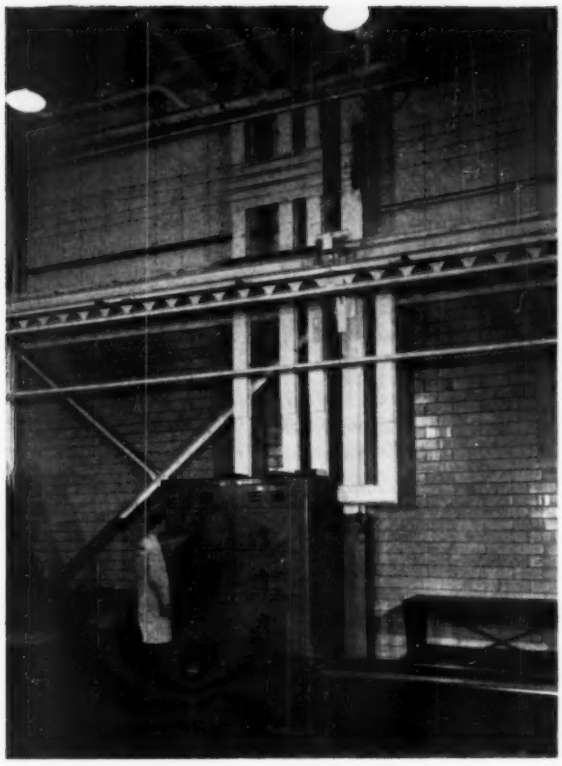
The closing session of the meeting presented talks by Mr. S. L. Hooper, Remington Rand, Inc., on "Noise, Its Effects and Cost," Mr. W. C. L. Hemeon, Engineering Director, Industrial Hygiene Foundation, on "Review of Latest Developments in Outdoor Air Pollution," and Dr. Waldo E. Fisher, Professor of Industrial Relations, University of Pennsylvania, on "Management Education and Worker Health."

Toxic Hazards

The conference on chemistry and toxicology, sponsored by the Foundation's advisory committee on chemistry and toxicology, was opened by Dr. William P. Yant, Director of Research of Mine Safety Appliances Company. Dr. Yant introduced the subject of fire gases and their effects by outlining the type of gases that occur incidental to the burning of various kinds of material commonly found within industrial plants. He emphasized that the greatest hazards aside from burns and excessive heat incidental to fires are the lack of oxygen and the occurrence of carbon monoxide. Other hazards are carbon dioxide and various irritating gases such as ammonia and hydrogen sulfide.

Mr. L. B. Berger, Chief of the Health Branch of the United States Bureau of Mines then discussed the prod-

(Continued on page 43)



A.S.A. Hygiene Standards For Industry

Industrial hygiene covers such a vast area that its practitioners often are involved in overlapping fields with which they are not familiar. Here are some existing and forthcoming standards on industrial hygiene and related fields which are good guides.

By HENRY G. LAMB
Safety Engineer
American Standards Assn.
New York

BEFORE discussing the use of American Safety Standards in industrial hygiene, it is best to define what we mean by industrial hygiene. I could probably spend a long time discussing the ideas of various people on this subject, but I am going to take this definition: "Industrial hygiene includes activities relating to the nature, cause, prevention, control or analysis of occupational disease or environmental factors relating to occupational health."

This definition gives quite a bit of latitude and when industrial hygiene is considered from this wide point of view, many American Standards apply to the subject of industrial hygiene. Let me review some of the standards available.

American Recommended Practice for Industrial Lighting. This standard includes recommended intensities of illumination and requirements with regard to the quality of light in industrial operations. There is no question about the development of eye strain from poor visibility, particularly when working at high speeds or on fine materials. It is within the realm of the industrial hygienist to consider the overall nervous energy expended in the seeing task, the relation of the level of intensity to worker fatigue, and the possible resulting increase in accidents due to this fatigue factor. The quality of illumination, indicated by glare and brightness ratios, also has an effect on fatigue.

Safety Code for Industrial Sanitation in Manufacturing Establishments. This standard specifies the minimum sanitary facilities necessary for an industrial plant. There is a companion document, providing specifications for sanitary drinking fountains. Certainly lack of proper sanitary facilities affects the health of employees. The earlier work of public health departments has laid the groundwork for good sanitary facilities in practically all American plants. In a recent talk before the American Standards Association, Dean F. M. Dawson of the College of Engineering of the University of Iowa, called attention to the fact that even today, in certain foreign countries, the wealthiest and most influential citizens and rulers of the land do not have the commonly accepted health facilities available to practically every-

one in this country: a dependable and abundant supply of pure water and proper disposal of sewage. Industrial hygienists do not have to fight many occupational health hazards in this country, simply because of standards which everybody takes for granted. Other American Standards in this field are: Air Gaps in Plumbing Systems, Backflow Preventors in Plumbing Systems and the Plumbing Code.

Project on Safety Codes for Exhaust Systems. This project has developed one document on the fundamental design of exhaust systems. It has also developed a safety code on ventilation and safe operation of open-surface tanks. This latter document was originally limited to safety in electroplating operations, but in the latest revision its provisions have been expanded to apply to all open tank operations where products are immersed in ordinary liquids and where industrial hazards may be present.

Standards for the Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying. Although this title reads "Standards for the Installation of Blower and Exhaust Systems," the standard is primarily concerned with the prevention of fire and protection against the spread of fire through duct work. It provides requirements for exhaust ducts to prevent them from becoming fire hazards. While fire prevention is not ordinarily considered the province of the industrial hygienist, he should be careful, as he makes recommendations in a plant, to be sure that something which he may do to improve occupational health, does not introduce a fire hazard.

Allowable Concentrations of Toxic Dusts and Gases. A sectional committee has developed maximum allowable concentrations for 15 toxic substances:

Benzene
Carbon Disulfide
Carbon Monoxide
Chromic Acid and Chromates
Formaldehyde
Hydrogen Sulfide
Lead and Certain of its Inorganic Compounds
Manganese
Mercury
Methanol
Methyl Chloride
Oxides of Nitrogen
Toluene
Trichloroethylene
Xylene

Safety Code for the Industrial Use of X-Rays. The standard not only provides for the industrial and non-medical uses of x-rays and x-ray machines, but also includes the use of radium as a source of radiation from industrial radiography.

Personal Protection Standards

In addition to the standards mentioned, which are directly concerned with industrial hygiene, there are other American Standards which provide protection for various parts of the human body. For instance, there are 28 specifications for various items of clothing, made from leather or asbestos or flame-resistant fabrics or other resistant materials for the protection of the human body from heat, flame, impact and various chemicals.

A project on protection of heads, eyes and respiratory organs has been in existence for many years and includes specifications for goggles, other forms of eye protection, respirators, canister masks, hose masks and other types of respiratory protection. There are also specifications for hard hats as protection against sharp edges or falling objects.

In the field of protective footwear, as part of the contribution to the war effort, the American Standards Association developed specifications for 5 types of safety shoes for men and 4 types for women. By the use of these specifications, the War Production Board arranged to provide steel for the toe caps and adequate leather and other supplies, in order to provide safety for the feet of workers in war production.

Personal protection may not be in the field of industrial hygiene, but there are many times when it can be used as temporary protection while the hygienist is making permanent installations. There may also be times when the hygienist will want to wear some of this material for his own personal protection.

New Standards

The above refers to the standards already available for use by industrial hygienists, safety engineers or others concerned with the health and welfare of employees. Let me look forward to the future. In accordance with ASA procedure all present standards are periodically reviewed and either reaffirmed or revised, in order to keep them up to date. This, in itself, requires considerable time and effort in some projects. In addition, the sectional committee on exhaust ventilation is considering new standards on exhaust ventilation for surface coating operations and solid materials handling.

A sectional committee got started some time ago to develop a safety code for work in compressed air. Due to a limited amount of interest and lack of facilities for aiding the work of the subcommittee, very little progress has been made, but unquestionably the industrial hygienist in certain operations would be very much interested in the effects of air pressure upon the human body.

There is unquestionably a great deal for the sectional committee on allowable concentration of dust and gases to do on additional substances which may prove harmful to the employees. It is also considering whether it is better to have individual maximum allowable concentrations for each substance or whether a system of zoning should be set up whereby all materials ordinarily encountered in industry could be assigned to one zone

or another in accordance with their effects upon the human body.

We must remember that the safety code for the industrial use of x-rays was developed before the public knew about the atom bomb. The sectional committee has already recognized the need for additional precautions against radiation as the result of radioactive isotopes being used more and more in industry. Certainly here is a field where there is a need for safety standards in the near future.

The American Conference of Governmental Industrial Hygienists developed a "Guide for Uniform Industrial Hygiene Codes or Regulations," which they approved in April 1949. This has been submitted to the American Standards Association with a recommendation that it be used as the basis for the development of an American Standard on this subject. The project has been initiated but as yet the sectional committee has not been organized.

One of the subjects which has now come to the attention of many industrial hygienists is the question of noise in industry and its effect upon the human ear. Although the ASA does not have any project on safety codes for noise abatement, the project on acoustical measurements and terminology has already developed standards for: acoustical terminology, noise measurement, and sound level meters for measurement of noise and other sounds.

A test code for apparatus noise measurements as well as several other standards in the field of acoustics has been developed. These are the kind of standards that must be available before any group can get together and intelligently discuss the problem of noise. I have no idea how soon facts will be available so that an agreement can be reached on noise control or how much control is advisable, but sooner or later there will be a need for a standard on noise.

The work in developing these industrial hygiene standards is performed by representatives of the various national organizations that have an interest in these problems. These committee members all serve on a voluntary basis. It is through their loyal and wholehearted cooperation that these standards have been developed, and everyone should appreciate the vast amount of time and effort that these volunteer workers have contributed in order that these American Standards might be available to help industry with its problems.

From an address delivered at the 22nd annual New York Safety Convention. Picture by courtesy of Monarch Machine Tool Co.

Hygiene Meeting

(Continued from page 40)

ucts of decomposition of some of the newer plastics used for instrument panels, as electric cable insulation, and in conveyor belts in mines. Low-temperature distillation and products of partial combustion of the

...THEN WE INSTALLED ALGRIP
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plastic materials are usually expected to occur in the atmosphere in the vicinity of fires. The greatest hazard from the burning of plastics on a quantitative basis is carbon monoxide.

Mr. H. H. Fawcett of General Electric's Research Laboratory emphasized the importance of proper storage and labelling of hazardous materials used in laboratories and pilot plants. He also emphasized the need for training personnel in all phases of fire prevention, fire fighting and first aid.

Professor T. F. Hatch, research adviser of the Foundation and Professor of Industrial Health Engineering at the Graduate School of Public Health, University of Pittsburgh, led a discussion on present-day appraisal of dust hazards. He pointed out some of the errors that have been made in attempting to measure the potential health-injuring capacity of industrial dusts and in efforts to diagnose illness in workers. Experience in this country, in South Africa, and in England leads to the conclusion that more fundamental research into the way dust acts on the human lung is needed. One conclusion which was reached in the discussion is that present-day instruments and techniques for appraising dust hazards are useful provided their shortcomings are realized and data obtained by them cautiously used.

The utilization of specialized laboratory equipment in solving industrial hygiene problems was discussed by Mr. Frank A. Patty, head of the Industrial Hygiene Department of General Motors Corporation. Various types of emission and absorption spectro-photometers, polarographs, electron microscopes, x-ray diffraction cameras, and other instruments are useful in industrial hygiene work. The principal question is whether enough use can be found in a specialized industrial hygiene laboratory to justify the cost of such instruments. Many companies have found it practicable to have such tools available in their research departments where they can be used as needed by departments such as the industrial hygiene department.

Various safety and health considerations related to the industrial use of chloro-bromo methane, carbon tetrachloride, perchlorethylene, methyl chloroform, and other aliphatic halogenated compounds were discussed by Dr. D. D. Irish of Dow Chemical Company's Biochemical Research Department, and others.

In the course of the discussion, it was pointed out that chronic effects of repeated exposures to low concentrations of anesthetic solvents are difficult to evaluate in laboratory experiments. Only slight changes in rate of growth of small animals thus exposed have been noticed in some experiments.

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See "What's New"—pages 71–74

A Slice of History

ONE of the early leaders in industrial medicine in this country points out that at the beginning of the present century, American industrial medicine was only in its beginnings. Only a few hazardous occupations, all because of necessity and location, such as railroading, mining and lumbering, employed physicians. This was primarily for the care of traumatic injuries resulting from accidents.

Some of these medical pioneers recognized the inadequate medical service provided, the lack of workmen's compensation for accidental injuries, the bad working conditions and unsanitary environments. In large measure their efforts, with the aid of public-spirited laymen, aroused interest in preventive medicine, public health, sanitation, safety, health education and in the legislation essential for these goals.

The American pioneer industrial physicians profited from the discoveries and publications of European physicians, scientists and others whose contributions were largely in the field of occupational medicine. Historically, England, as one of the results of the industrial revolution which followed the development of the steam engine, founded modern public health and industrial hygiene. English laws for the protection of workers were adopted by many states in this country. Other inventions and industrial expansion led to major developments in this country. Many research projects undertaken by university teachers and research workers dealt with occupational poisons, including phosphorus, lead, various dusts, gases and fumes.

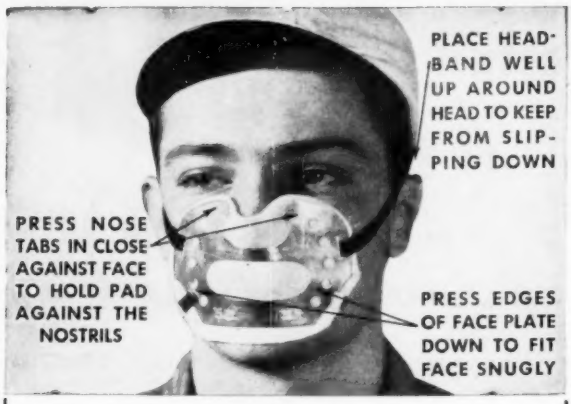
In the past half-century, much progress has been made in developing industrial processes, safety appliances, safety clothing, temperature control and many other measures—all of which have helped in the industrial advancement of this country. However, this is certainly no cause to rest on our laurels. Rather, it is essential to be on guard against new synthetic and other chemicals and work processes which may present hazards to exposed workers. The task will never be completed. New processes bring new problems and require new ingenuity, new ideas and new efforts.

Smoking and Asthma

MEDICAL journals, popular magazines, and the public press have for some time been publishing articles relating to the possible connection between smoking and cancer. In this matter the question has arisen whether the presumed increase in lung cancer, particularly among male adults, is due or materially contributed to by smoking, especially of cigarettes. Reports thus far seem to be inconclusive.

In the August 13, 1952 issue of the Mayo Clinic's publication there appeared an article on smoking and its relation to asthma. In summary, it stated that smoking is one of the commonest sources of bronchial irritation, and invariably increases cough and asthma. Smoker's tongue, smoker's cough, smoker's throat and smoker's bronchitis are not figments of the imagination. When smoking is discontinued, these effects clear up in most instances. Smoking also has an irritating effect on the larynx. If an individual has asthma, he should not merely reduce smoking, he should completely stop it. The asthmatic patient with his sensitive, inflamed respiratory passages, responds quickly to irritation, and coughing and wheezing follow.

These are simple facts that industrial nurses should be aware of, especially when workers who are heavy smokers come to the medical department for some medication to relieve their coughs. The individuals should be referred to the plant or family physician for examination and advice. Pills and powders are not the cure.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Teeth and Workmen's Compensation

INDUSTRIAL nurses often do not realize that all of the states provide dental benefits under their workmen's compensation laws, either through specific provisions or through an interpretation of the medical aid provision. A specific provision regarding dental benefits is contained in 12 of the workmen's compensation acts, while in the others dental benefits are provided through an interpretation of the medical benefit provisions.

Colorado, Montana, and Utah place specific cost limitations on dental benefits. In general, however, dental benefits are subject to the same limitations as prescribed for all forms of medical services. In more than half the states, medical services are unlimited either by specific statute, or because the administrative authority can extend such services indefinitely. In the remaining states, period or cost limitations or both remain. Where extensions are authorized, these are restricted to specific periods or amounts, or both.

In New York, the Workmen's Compensation Board has required employers to furnish dental services if recovery from an employment injury was being retarded because of an infectious dental condition, even though the employment injury did not result in dental damage.

The laws in 15 states specifically provide for repair and replacement of dentures if damage occurs as the result of a compensable accident. In 11 additional states medical benefit provisions are interpreted to include the repair or replacement of dentures where it is established that they are broken as a result of a compensable injury. Seven states generally make no provision for repair and replacement except when it is rendered necessary by an accompanying injury to the mouth; or when a change in the contour of the mouth is caused by an accident; or when dentures are permanently attached to natural teeth. It is advisable for industrial nurses to be informed on the provisions of laws relating to dental problems in their states.

Winter Is Here

WITH the coming of the cold weather, there is usually an increase in colds, influenza, grippe and pneumonia. A bulletin of a large insurance company points out that the death rate from pneumonia and influenza, which began to decline rapidly about 15 years ago with the introduction of sulfa drugs therapy, is continuing its downward trend with the widespread use of more recently developed antibiotics. In the past 8 years alone the death rate from these diseases in our country has been reduced by about one-half; since 1936 it has dropped nearly three-fourths.

Despite these extraordinary results, pneumonia and influenza were still responsible for more than 51 thousand deaths in the United States in 1951. They claimed 21,000 more lives than did tuberculosis; and, in the list of diseases, were outranked only by cardiovascular conditions, renal conditions and cancer. In addition to the large toll which they exact directly, these respiratory infections are contributory causes in many thousands of deaths annually charged to other causes.

Pneumonia and influenza are hazards to life all year round, but particularly so in the winter and spring. About three-fifths of the deaths from these diseases now occur in the five months—December through April. The proportion was appreciably higher before the newer methods of treatment reduced seasonal variations.

Although pneumonia and influenza claim their victims at every period of life, there is marked variation in the death rate by age. The highest death rates are observed among the very young and the very old. There are materially higher death rates among males than among females. Whether this is due to occupational exposure in certain types of work is a question. For industrial nurses there is an educational job that needs to be done, especially among those who are not well, are subject to respiratory infections, work under extreme temperature conditions, or fall in older age groups.

Women Workers

THIS is the title of a handbook of facts relating to women who are gainfully employed. (Bulletin No. 242, U. S. Department of Labor. Women's Bureau, 1952.) In this year the civilian labor force included approximately 19 million women. This was almost half again as great as the entire number of all workers, men and women, in 1870, the year of the first census that fully reported women's employment. In each generation, women have entered the labor in force in increasing proportions. In 1870 less than 14 percent of them were gainful workers; in 1952, 33 percent were members of the labor force. More than 40 percent of the women in the population in early 1951 had worked at some time during the preceding year.

Women have constituted an increasing proportion of all workers in the United States from decade to decade. In 1870 women were less than 15 percent of this country's workers, and in 1952 they were more than 30 percent of all workers. They were distributed as follows: Of 18,234,000 women workers in 1952, 29 percent were clerical or kindred workers; 19 percent operators or kindred workers; 10 percent private household workers; 11 percent professional and technical workers; 12 percent service workers (except private household); 8 percent sales workers; 4 percent farmers and farm workers; 5 percent managers, officials, proprietors; 1 percent craftsmen and foremen; and 1 percent laborers (except farm).

Factories employ a fourth of all women workers, more than any other industry group. More than 4,000,000 women in the United States were employed in manufacturing in 1951. About 45 percent were at work on apparel, textiles or foods. Together with those in the electrical machinery industry, printing and publishing and leather plants, these accounted for over 60 percent of all women in factories.

From the point of view of the industrial nurse, this steady increase of women workers in industry compels attention. In times of labor shortages, many married women, with homes to manage, children to feed, shopping, serving and other chores, are drawn into factories. Such women need special attention.

Die Guards

(Continued from page 19)

At no time is there an opening of more than 3/8 of an inch between the coils. Fingers and hands are pushed away from the job by the closing action of the coil when the press is tripped.

In addition to these and the other types of protective measures taken by the company, the alertness and experience of supervisors and workers play a large part in the safety record the X-ray department has achieved.

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TRANSPORTATION

Winter Driving Rules

TOO many drivers learn the hard way about how to combat winter driving hazards, according to Professor A. H. Easton of the University of Wisconsin. They learn by that sickening sensation of an uncontrolled skid, warm blood, cold sweat or hot tears. There's an easier way, he said.

Easton, director of the university's automotive safety research project and a test expert for the National Safety Council's Committee on Winter Driving Hazards, declared that a little study and observation of six fundamental rules will prevent many thousands of annual traffic tragedies and troubles during snow-ice weather.

These new rules are aimed at reducing the high death and accident rates resulting from inadequate traction and reduced visibility—the major winter driving problems from November through February.

Six basic rules for safe winter driving follow:

1. *Get the feel of the road.* Try your brakes occasionally, while driving slowly and away from other traffic, to find out just how slippery the road is.

2. *Slow down.* Adjust your speed to road and weather conditions so that you can stop or maneuver safely.

3. *Keep windshield clear.* You must see danger to avoid it, so be sure your headlights, windshield wiper blades and defrosters are in topnotch condition.

4. *Use tire chains on snow and ice.* They cut stopping distances about in half, and increase starting and hill-climbing traction by four to seven times. Even with the help of chains, however, lower than normal speeds are a must on snow and ice.

5. *Pump your brakes to slow down or stop.* Jamming them on can lock the wheels and throw your car into a dangerous skid.

6. *Follow at a safe distance.* Keep well back of the car ahead so you have room to stop. Remember that, without tire chains, 3 to 12 times as much stopping distance is required on snow and ice as on dry concrete.

Other important findings by the committee include the following:

All tires, except big truck sizes, are now made largely of synthetic rubber. Synthetic tires wear better, perform normally on dry or wet pavements and have other advantages. But on snow and ice they skid about 8 per cent farther and have 14 to 35 per cent poorer forward traction ability than pre-war natural rubber tires.

Special winter tires of 25 different types were tested for traction. The tests showed that while some tires gave improved traction under certain conditions over conventional tires, their overall improvement is not great enough to warrant less caution when driving on slippery surfaces. The same tests also demonstrated that special winter tire treads do not approach the performance of reinforced tire chains.

Describing tire chains as the best self-help available to the driver, the committee said reinforced tire chains reduce braking distances on both snow and ice about half, increase forward traction on ice about seven times, and on packed snow out-pull conventional tires nearly four times.

Semi-Trailer Trucks

While most tests have been made on passenger cars, research in the last two years has been concentrated on the jackknife hazard to tractor semi-trailer trucks on snow and ice. A report summarizes the findings as follows:

"It has become evident from this research that the best means of preventing jackknifing is to keep all tires rolling, in order to maintain steering ability and at the same time get maximum grip for slowing or accelerating. Due to increased traction provided, it was found that reinforced tire chains made jackknifing virtually impossible with a tractor semi-trailer combination on level lake ice at 20 miles an hour. Similarly, it was found that recovery from jackknife angles of as much as 90 degrees was possible with front or all-wheel drive tractors."

Speed Takes Its Toll

AN INCREASED severity of "super-accidents" will boost the nation's annual traffic toll "beyond belief" in the next decade if drivers are "encouraged to speed on bigger and better roads on the theory that engineering alone will produce safety" warned Thomas N. Boate, accident prevention department manager of a leading insurance organization.

Speaking before the 14th annual safety meeting of utility companies affiliated with Ebasco Services, Inc., Mr. Boate declared the present dream of a nationwide network of super-highways will become "a nightmare of death and devastation" in multiple-death accidents unless reckless drivers are curbed by rigid enforcement of more reasonable speed limits on these so-called "safest roads," as well as all other highways.

He attacked as "safety heresy" a recent statement by the head of a national highway safety organization which Mr. Boate said "practically

(Continued on page 50)

See Your Car As Others See It— A SHINY MENACE!

All that glitters is not gold—nor safe. A little dullness—in car paints and trim—far from making life less fun—would make it safer and happier for drivers.

By L. P. LYMAN

SAFETY engineering has done much to make automobiles safer for those inside them. Much remains to be done, however, to protect those outside, especially the driver and occupants of the cars behind. One of the worst safety hazards comes from the many glare spots on the modern automobile. A chief source of danger is the side mirror, now very common. The angle at which it reflects the sun at particular times of the day throws the glare directly into the eyes of the driver behind. The glare is completely blinding, and normal eyes are nearly useless for a matter of seconds. No one knows better than safety engineers that seconds count in traffic driving.

The curved and tilted back windows on cars are another serious trouble spot. Straight windows on old cars rarely catch the direct rays of the sun, but tilted ones produce a bad glare any time of the day. Not quite so blinding as the mirror reflection, because the angle differs, there is still enough refraction to make vision very difficult. I followed a modern car east in the late afternoon, and there were nine glare spots from the rear of the car. Two were from the rear window frames, two from the top and bottom of the dividing frame, one from the center of the trunk, two from the tail lights and two from the bumper ends. It adds up to a glaring danger.

Increased polishing of cars makes this menace a growing one. It has become pleasant to follow an old car with worn down paint and rusty chrome. Light spots show, to be sure, but the dull surfaces absorb more than they reflect, and driving is considerably more comfortable.

Fatigue and Safety

Typewriter manufacturers long ago found that a dull surface and dark keys do away with much typist fatigue. The shiny black typewriter, with white keys bound in metal, has been transformed into a machine cased in what is best described as an orange peel surface, with solid black keys and white letters.

The glare from a typewriter is not likely to cause an accident costing anywhere from tens to thousands of dollars; and yet, because typists tired quickly under the old conditions, changes were made. Drivers tire too, and the tired driver is prone to accidents.

Anything to lessen fatigue seems to have been developed—but only inside the car. We have engineered seats and automatic shifts, gadgets to turn the steering mechanism and make signals for us, and push buttons to open windows and doors so we don't have to wear ourselves out turning those old handles. If we stay inside our own car, we should arrive at our destination fresh as daisies. Of course the car has been cleaned and polished for the trip,

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and every bit of paint and metal is ready to reflect all the glare possible for the driver in back. He in turn is being safeguarded by steel and shatter-proof glass from every hazard, except glare-blindness.

Commenting upon the use of aluminum paint on silos, the New York Times automobile column reported motorists had objected to this new trend because the glare was annoying and potentially dangerous. Never yet have I had to follow a silo for ten miles on a sunny day. Alas, I have many times been forced to follow a shiny car that far, squirming and wriggling in my place trying to avoid the glare and desperately hoping that when the driver took a particularly blinding position nothing would come out of a side road into my path. The only cure I have found so far is to drop back a hundred feet or more. This is a move not always practical in traffic, and often in vain on the open road. As soon as I avoid one car, three more rush into the breach, each shinier than the last.

The situation is truly serious for the conscientious driver who wants to see where he is going. It is time the automobile industry considered some means of correcting it. As long as cars are made with more and more metal trim and glistening paint the motorist will have to buy them. If it were suddenly fashionable to have a dull-finished car with no bright work, life would be a great deal pleasanter for everybody.

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Speed Toll

(From page 48)

put a blessing on speed so long as the highway was 'properly engineered.'" The statement in question, Mr. Boate pointed out, stressed dangers that are virtually eliminated by super-highways, such as head-on collisions, intersection crashes and pedestrian accidents, but minimized "the far greater danger" of disastrous mishaps resulting from too much speed.

"In nine out of ten cases it is the driver who causes an accident. The driver who continually speeds is only hastening the day of reckoning. All the super-highway engineers in the world won't be able to save him if he goes too fast too often and suddenly faces an emergency he can't handle because of excessive speed."

Mr. Boate warned that an increasing number of disastrous "chain-reaction" accidents will result from "permitting or encouraging too much speed" on present or future highways. The danger of these "super-accidents" is increased when unfavorable road conditions prevail, he said, because drivers following a vehicle which becomes involved in an accident are going too fast to stop in time. Under perfect conditions, he pointed out, a vehicle can be braked to a safe stop within 264 feet from a 60-mile speed, or 297 feet from a 70-mile pace, on the

average, but these safe spacing distances are seldom observed or enforced on super-highways.

The speaker cited as examples of "chain-reaction" mishaps one accident involving five large trucks and causing two deaths and property damage and liability claims totaling $700,000, and on another super-highway the pile-up of 11 vehicles during a fog.

The $700,000 super-accident occurred when one large tractor-trailer jackknifed on a slippery stretch of road near a tunnel as the driver applied his brakes. One by one, four trucks following it ploughed into the wreckage, their drivers unable to stop in time because they were traveling too fast and following too close, Mr. Boate said.

Ironically, the other "chain-reaction" mishap occurred simply because one driver obeyed the law and slowed down as he entered a fog bank, the speaker added. Eight other cars and two trucks piled up, despite the fact that the turnpike had a legal speed limit of 35 miles an hour under fog conditions. The fact that 10 out of 11 drivers did not obey the law and lacked the ability to control their vehicles eloquently testifies, he declared, to the fact that most motorists cannot be trusted to drop from high speeds to lower speeds at the proper time.

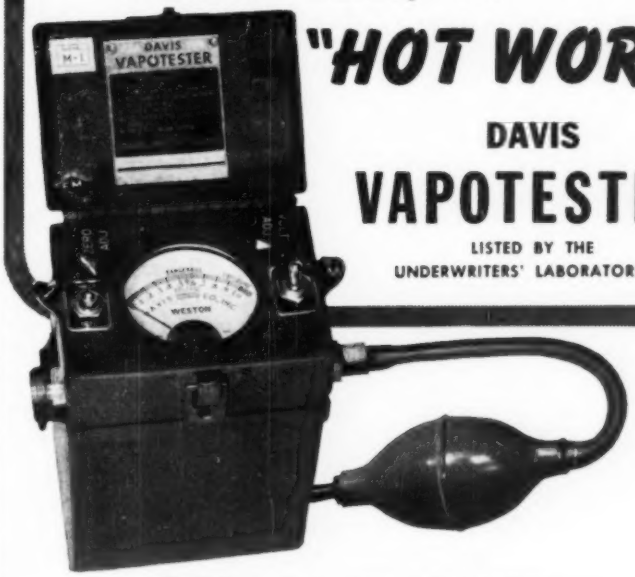
An independent radar speed check of more than 400 commercial vehicles on one turnpike showed more than half of the trucks were traveling above the legal speed limit of 50 miles for trucks, according to Mr. Boate. He emphasized that truck operators generally believe that the majority of accidents which result in death and high property damage are due to speeds above the driver's capacity to control his vehicle properly.

Mr. Boate declared that one study had shown this turnpike's fatality record is twice that of the highway record of the state and that its property damage per accident is five times greater than the estimated national average. This study, he pointed out, asserted that the turnpike's accident problem is one of severity rather than frequency. According to the speaker, the commission in charge has "resisted" efforts of its safety committee to reduce its top speeds for cars and trucks and to increase enforcement of the speed laws with more manpower.

Mr. Boate declared that another super-highway already has recognized that speed is a deadly factor in accidents. Of 850 drivers who received summonses on that turnpike, where the speed limit is still 60 miles an hour, during an eight-week period 540 were ticketed for speeding, or more than 60 per cent. Its administrators have learned, he added, that the main causes of its accidents are: traveling too fast for conditions, exceeding the speed limit, and following too close at high speed when emergency stops are required.

Assured Safety for

"HOT WORK"



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EMERGENCY EQUIPMENT CO., INC.

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(For full details, use Key # B-30 on free Inquiry Card on page 75)

A NEW TWIST

A DRAGLINE oiler was removing a hook from a cable mat sling. Suddenly the cable untwisted itself and struck the employee just above the eye. He was lucky—the cable didn't catch his eye and only gave him a deep cut above it. The fault here lay in the use of a cable without a device to absorb the slight twisting of a heavy wire rope when a weight is removed from it and it comes to rest.

"WE WERE JUST GOING TO FIX IT . . ."

THE floor around the wind-up of a calender train had needed repair work for some time. In fact, there was a sizeable depression on the floor to which attention had been called a number of times. There was an order in the repair shop for repair of the floor, but not much had been done toward getting it made.

A calender roll had been placed on the edge of the depression and it tumbled over against an employee's legs, breaking his foot. He lost a month's work.

The floor was repaired in matter of hours after the accident, in fact, before a photographer could get a picture of the condition causing the accident. It was not reported whether the employee was wearing safety shoes, but the primary responsibility for the accident belongs to plant maintenance and production for allowing the condition of the floor to exist. The remedy is to follow through on all safety orders. It's always too late after an accident.

ARE YOU YOUR BROTHER'S KEEPER?

A WORKER was found dead from electrocution lying beside his electric hammer. He had been working in a trench on a building site. The ground lead on the hammer was found to be defective. The housing of the hammer had become "live" when one of the contacts on the switch had worked loose and touched the switch box. Apparently, someone had reassembled the hammer after overhauling a few days before, and failed to replace a fiber insulating washer. This caused the accident. This death points out once again that maintenance cannot be too careful. A tiny omission cost this man's life. He was not responsible. He had to depend, as everyone does in some way or other, on someone else, and that someone let him down.

"NEW" DOESN'T MEAN "SAFE"

IN a recent hot-water-boiler explosion, the plant manager was fatally injured. The news report read simply: "A new safety valve had been installed but was not working properly." The moral is just as simple as the news report—just because a device is new doesn't mean it's safe. It should be thoroughly tested before it is used and; most important, the machine in which it is used should not be given normal use immediately. Boilers happen to be one of the most dangerous types of equipment on which to use a new device or part, but almost all equipment, including safety equipment, requires special care and gradual adjustment when something new is being incorporated in it.

"I DIDN'T KNOW . . ."

A WORKMAN, employed by a sash and door firm, was using a riveting gun which fires .22 caliber cartridges, ejecting metal screws into partitions to fasten them to metal frames. He had fired 4 "shots," driving the screws through the wood and into the steel beam supporting the partition. When he fired the fifth he heard a scream. The 1¼" screw had gone through the ½" wood, missed the beam and buried itself in another worker's stomach.

"I didn't know he was standing there," was the comment. When power-actuated guns are used, barricades and careful instructions must be used to prevent anyone being exposed to the "bullets."

WHAT'S IN IT?

A WOMAN worker had finished her cigarette and was about to leave the smoking area in a plant. Suddenly she noticed the receptacle for cigarettes was on fire. Apparently her first thought was to pour water on it. She dashed over to a table, picked up a can, and poured the contents on the fire. The can contained solvent. Her condition is fair. Incidentally, the fire extinguisher to be used on such fires still hangs on its post . . . unused.

ALMOST PERFECT . . . BUT NOT QUITE!

WELDING precautions can never be thorough enough. Here are 2 cases in which precautions were taken, but failed because they didn't protect against all hazards. In the first instance, a cutting torch was being used to remove a faulty steam valve. A hot globule of metal went through a crack in the floor and ignited oily deposits in the flywheel pit. Fire flashed upwards, involving the wooden enclosure and drive belts. Sprinklers surrounding the enclosure opened to confine the blaze to the pit.

In the other case, welders were installing steel framework in a plant. A spark passed through a crack in the wall and ignited lint deposits on steel columns. Fire raced to the roof, across the roof and into a warm air chamber. The air-heater and steel deck roof were severely damaged, and production was seriously curtailed.

SQUARE PEG IN A ROUND HOLE

OR RATHER, too big a bit in too small a drill, because in this case a maintenance worker was using a portable electric drill with an oversize bit to ream out a hole. The bit jammed in the hole and the drill handle struck him in the stomach. He received a severe bruise to the stomach and spleen. The oversize bit should never have been used in the drilling machine. Work requiring a large hole to be drilled should be taken to a drill press. The fault lay with supervision for not providing the correct tools, but the drill operator might have been careful enough of his own safety not to try to do the job with improper tools.

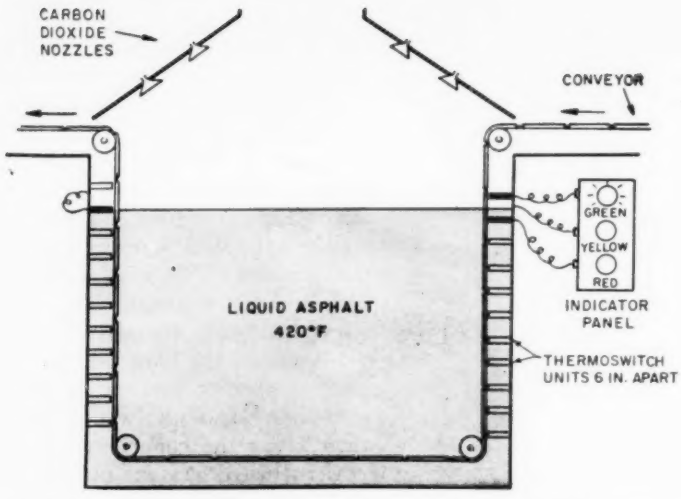

Diagram shows siding material being run through tank of liquid asphalt. Thermostats register rise and fall of liquid by turning on and off lights on panel at right.

Thermostats Safety-Check Liquid Asphalt Level

THERMOSTATS have solved the problem of keeping a continuous check on the operation of a liquid level controller in a hot asphalt tank and of giving a positive visual alarm in case the controller fails to function. The thermostats were adopted because the high temperature and extreme viscosity of the asphalt interferes with the operation of most level-indicating instruments. This system of level indication was devised by engineers at the Flintkote Company, East Rutherford, N. J., for use in a dip tank 15 feet deep in which insulated siding is saturated with liquid asphalt at a temperature of about 420° F.

As shown on the accompanying figure, two rows of thermoswitch units, each containing 11 units spaced 6 inches apart, are mounted on opposite walls of the tank. The rows are staggered vertically so that the liquid level is actually measured at 3-inch intervals. The thermostats are connected to a set of 3 pilot lights. By means of prong-type connectors, the plant men can connect any 3 thermostats to the 3 pilot lights, depending on which liquid level is required for a particular operation. The height of the liquid level is varied to govern the amount of penetration of the saturant in the siding material, since the siding picks up the asphalt by passing down one side of the tank and up the other.

The thermoswitch units follow the position of the liquid level by responding to the temperature of the asphalt and are set at approximately 375°F to operate the pilot-light circuits. Thus, when a thermostat is submerged in the hot asphalt, its contacts are open; when the liquid level falls, the contacts close. In the set of three pilot lights, a red light indicates the lowest allowable level; a yellow light, the safe operating level; and a green light, the highest allowable level. During normal operation of the dip tank the red light is extinguished; while the yellow, "safe operation," light will occasionally blink on and off, indicating that the thermostat is responding to the slight rise and fall of the liquid level as the asphalt is alternately used and replenished by the feeder. The green light usually burns steadily, since the liquid level is normally below the controlling thermostat for that light.

High heat and high viscosity do not impair the operation of the thermoswitch units, because the switch mechanism is entirely enclosed within the outer shell of the unit. Moreover, since the unit has an adjustable setting range of 500° F and is constructed to withstand sizable temperature overshoots without adverse effect, it can be safely used for this continuous high heat application.

Other Methods of Use

Regular-type thermoswitch units (contacts open on temperature rise) were used in this installation so that these thermal controls could also be used in a circuit to cut off a pump or similar feeding equipment as the liquid level rose above the desired point. By the use of inverse-type units (contacts close on temperature rise), a similar system of warning lights can be constructed, except that the lights will be illuminated—rather than extinguished, as in this installation—as the liquid level rises. Also, a warning horn or bell can be inserted in series with the upper and lower thermostats to give additional warning that the liquid level is above or below safe operating limits.

Another safety feature of the present installation is the use of an automatic carbon-dioxide extinguishing system which blankets the surface of the asphalt with carbon-dioxide in the event of fire. The top of the tank is enclosed by a hood which is equipped with a ventilating duct and fan for drawing off fumes from the hot asphalt. Mounted inside the duct is a pair of fire detection units set at about 500° F. These fire detectors are incorporated in a circuit which controls the release of the carbon-dioxide and the draft in the ventilation duct. In the event of fire, the detectors immediately actuate the release of carbon-dioxide into the hood and tank and trigger a damper mechanism in the duct to prevent the up-draft from sweeping the flames up through the duct.

Picture by courtesy of Fenwal, Inc.

Free Bulletins Pages 75–76

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Soles and Heels

Fourth of Five

CORK COMPOSITION

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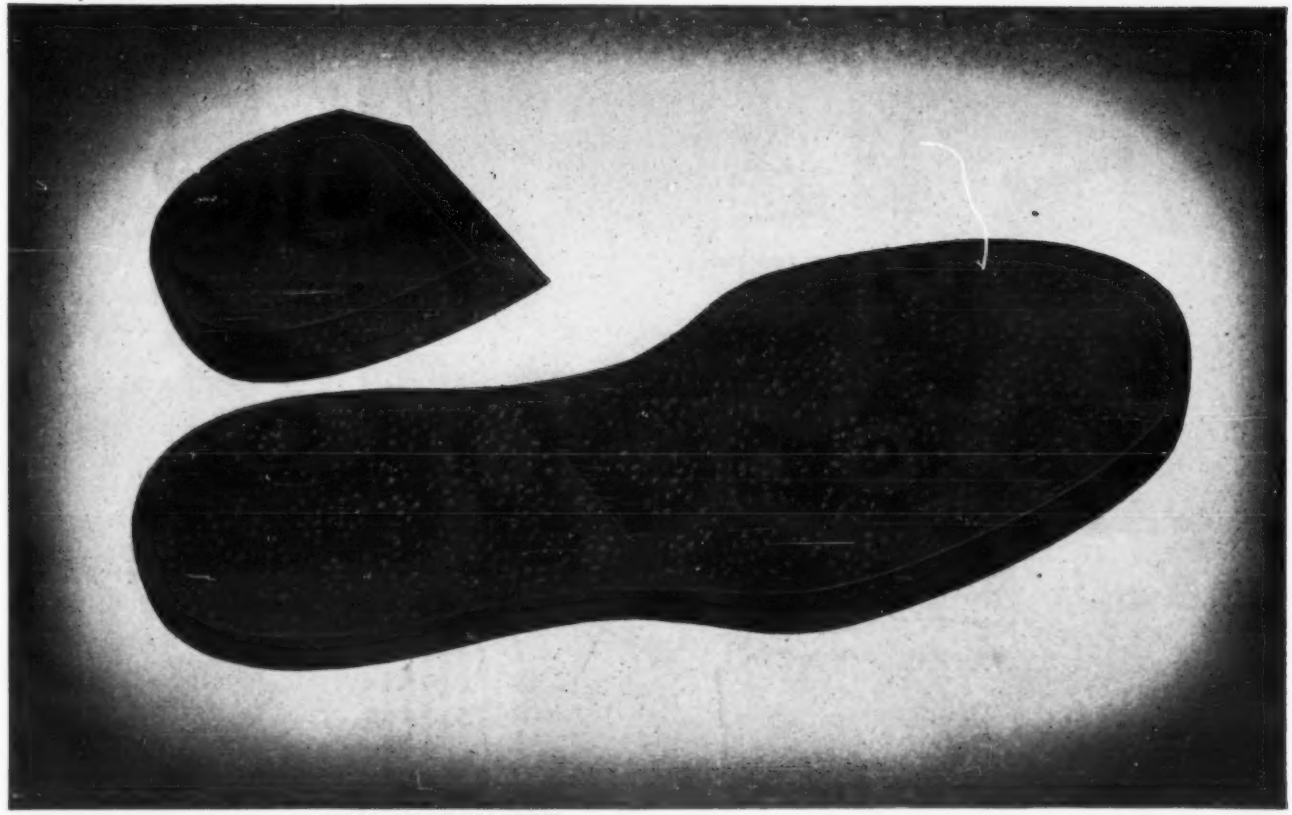

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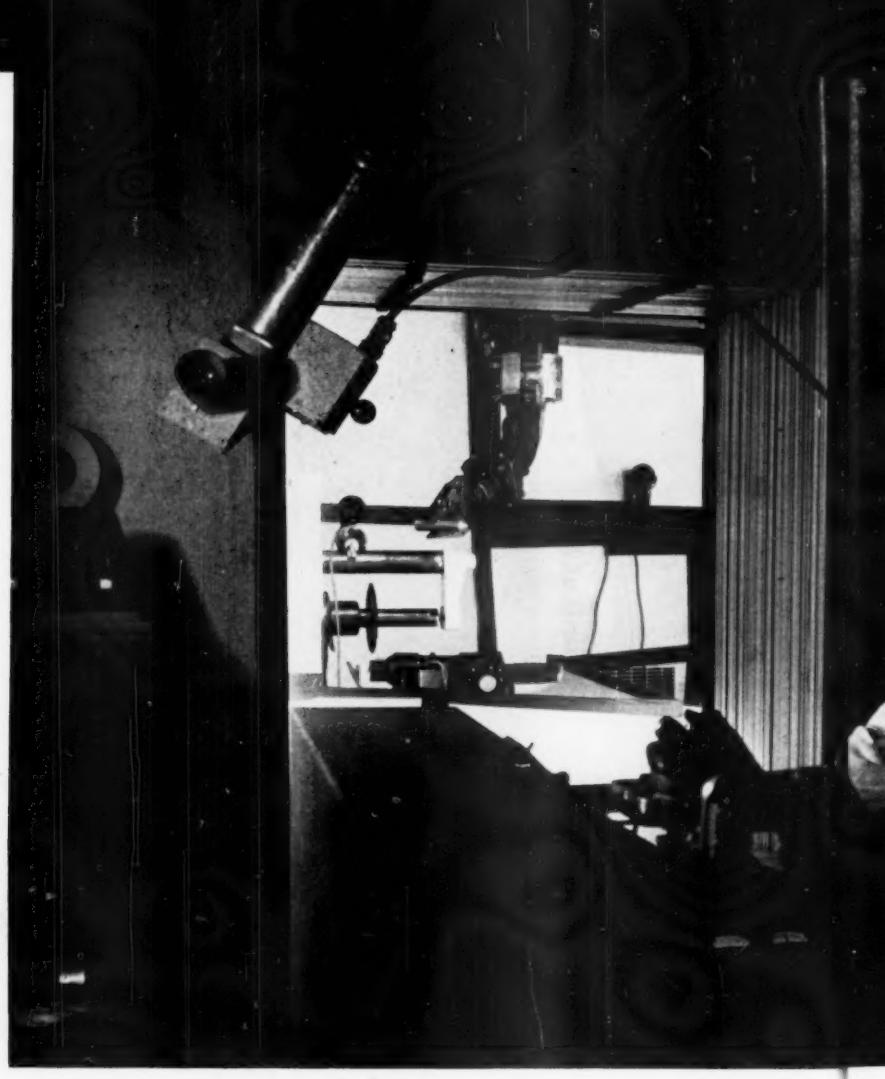


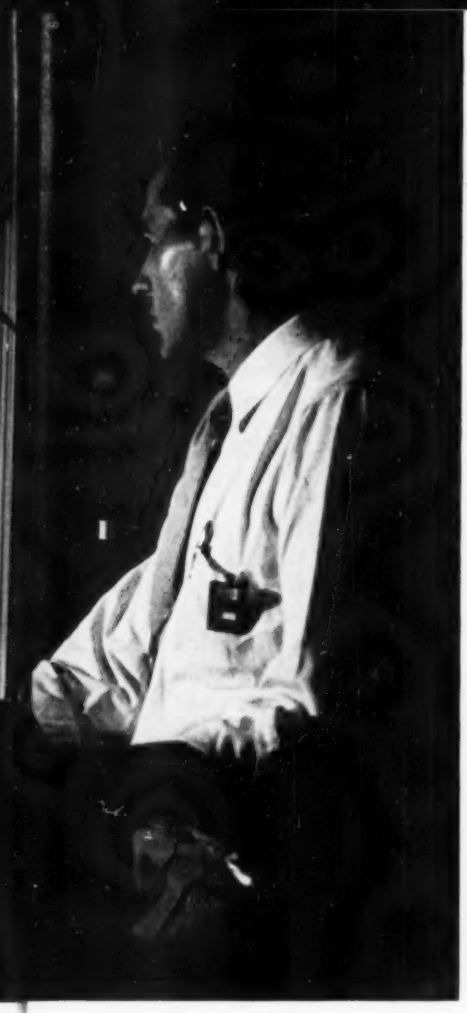
TOO HOT TO HANDLE—Radioactive specimens, too "hot" for human hands to handle, get special attention in one of the laboratory cells. Here, an engineer, using remote control equipment, operates a milling machine to cut the end off a container holding radioactive material to be tested. Once the end of the specimen container is removed, the untouchable objects are dropped into a tray, picked up by another manipulator and carried to another cell for further testing. The periscope at left of picture has a motorized head and views cell at close range.

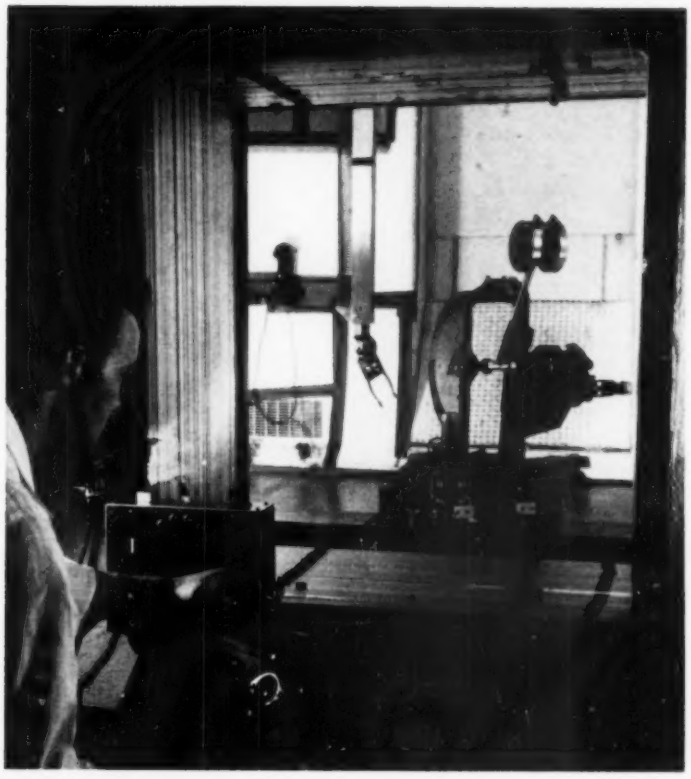
"HOT LAB"

NUCLEAR scientists, who work daily with radioactive materials too "hot" to handle, have been able to solve many of their problems by using one of the most unique "tools" of the Atomic Age—the "Hot Laboratory."

One such group of scientists is at work in the Bettis Plant, Pittsburgh, Pa., of the Atomic Energy Commission. This plant is operated by the Westinghouse Atomic Power Di-

HOT LABORATORY—Scientists and technicians test and observe the radioactive materials by remote control and from behind three to five feet of concrete and lead walls. Layers of thick plate glass, separated by oil, protect them from deadly radiation emitted by the "hot" materials in cells. Periscopes and telescopes give view of radioactive objects at close range.





LOOK, NO HANDS—To find out how much of an impact a material will stand after it has been exposed to radiation, a specimen is struck with a hammer-like instrument shown in the cell. Here, the technician gets set to release the hammer and allow it to strike a small specimen held in position at the lowest point of the hammer's swing. Small manipulator "claws" are standing nearby to pick up specimen and carry it to another device to be examined for "impact strength."

—ATOMIC AGE TOOL—

To protect nuclear engineers and technicians, operations involving "hot," or highly radioactive, materials are carried out by remote control in enclosed cells.

vision, which is engaged in two of the nation's atomic projects—construction of the atomic power plant for submarine U. S. S. Nautilus, and development of another nuclear reactor for a large vessel, such as an aircraft carrier. Both projects are being conducted for the U. S. Navy and the Atomic Energy Commission.

A major problem in the construction of nuclear reactors is that of handling radioactive materials during tests and laboratory analyses. For safety purposes, this testing is done almost completely by remote control in a building known as the "hot lab."

There are five "hot spots," or cells, and these are separated from the main working area by a thick, concrete and lead wall. In the cells themselves—each separated from the other by a thick steel wall—are testing devices designed especially for the lab's operations, such as equipment for weighing specimens and measuring their hardness and impact-resistance after exposure to radiation.

The inside of each cell is viewed through a 36-inch-thick window comprised of layers of plate glass separated by oil. Mechanical, claw-like "hands"—controlled from outside the cell—move radioactive objects into position for testing. A periscope-telescope arrangement enables scientists to examine specimens through a remotely controlled microscope.

Pictures by courtesy of Westinghouse Electric Corp.

INSIDE THE TRADE

Fine Organics Appoints

FINE ORGANICS, INC., announces the appointment of Capt. George W. Mikkelsen as director of its Marine Chemical Department. Capt. Mikkelsen, a Navy Lieutenant of World War I with over 30 years experience in the marine field, is a member of the Port Engineers Society and Marine Square Club, a life member of the Yacht Masters & Engineers Society and the Robert L. Hague Post of The American Legion.

New Member for IHF Board

THE election of Mr. A. R. Fisher to the Board of Trustees of Industrial Hygiene Foundation is announced by Andrew Fletcher, President of St. Joseph Lead Company, New York, and Chairman of the Foundation's Board. Mr. Fisher is President of Johns-Manville Corporation, New York, and has long been active in the promotion of industrial health among workers.

Micro Opens Rochester Office

A NEW engineering service and sales office has been established in Rochester, New York, by the Micro Division of Minneapolis-Honeywell Regulator Company.

The new office completes a two-year expansion program in which offices have been established in New York, Washington, Philadelphia and Boston. The Rochester office is the final link in the Eastern division chain.

MSA Forms New Sales District

THE Mine Safety Appliances Company, Pittsburgh, manufacturer of safety equipment for industry, has established headquarters and warehouse facilities in Kansas City, Missouri for a new 9-state sales district. The new district includes Kansas, Missouri, Iowa, Nebraska, Minnesota, Wyoming, Eastern Montana and North and South Dakota.

Named sales manager of the new district was C. H. Mehaffey, a former resident of Kansas, who has been with the company 17 years. Until his new appointment, Mr. Mehaffey was assistant manager of the Industrial Department of the company at Pittsburgh.

Floor Sanding Machine Division Sold

MULTI-CLEAN PRODUCTS, INC. has announced their purchase of the Floor Sanding Machine Division of the Lincoln-Schleuter Floor Machinery Company in Chicago. Manufacturing operations are being transferred to the Multi-Clean factory in Saint Paul, Minnesota, where the company's main offices are also located.

Safety Solvent Firm Expands Distribution

THE John B. Moore Corporation, Nutley, N. J., announces warehouse stocks of the company's safety solvents have been installed in Pittsburgh, Pa. and at Detroit, Michigan. Production of the company's solvent products is at Clifton, N. J. The company also announces the appointment of representatives for western Pennsylvania, West Virginia, western New York, Michigan and the West Coast.

high jobs go fast on the

safety level.....

Dayton's special "Safety Level" working platform gives workman complete confidence. He works faster, more efficiently, uses both hands. Check the "big 6" features that make Dayton your best buy.

1. Rail-guarded "Safety Level" platform.
2. Locks in place automatically.
3. Rubber safety shoes.
4. Light weight—great strength.
5. Economically priced.
6. Complete size range 3' to 16' in height.

Write Dept. G for Bulletin

Dayton safety ladders

Dayton safety ladder co.
2339 Gilbert Ave., Cincinnati, Ohio

In Canada: Safety Supply Co., Toronto

(For full details, use Key # B-32 on free Inquiry Card on page 75)

Gustin-Bacon Names New Philadelphia Distributor

THE Benjamin-Foster Co. of Philadelphia has been appointed a distributor for the Gustin-Bacon Mfg. Co. of Kansas City, Mo. The Philadelphia firm will handle the company's glass-fiber insulations in its designated trade territory.

Walter G. King Eye Safety Pioneer

WALTER G. KING, who can truly be termed the dean of safety, died last month at his country home in upper New York State at the age of 92.

Long affiliated with American Optical Co. as director of safety products, Mr. King was a native of Cleveland but lived in New York prior to his retirement in 1950.

Mr. King, who is credited with the invention of the industrial safety goggle, was a member of the Julius King Optical Co., founded by his father in Cleveland. He became deeply concerned with the fact that so many artificial eyes were being sold to industrial workers in the days before the eye safety program was first put into effect.

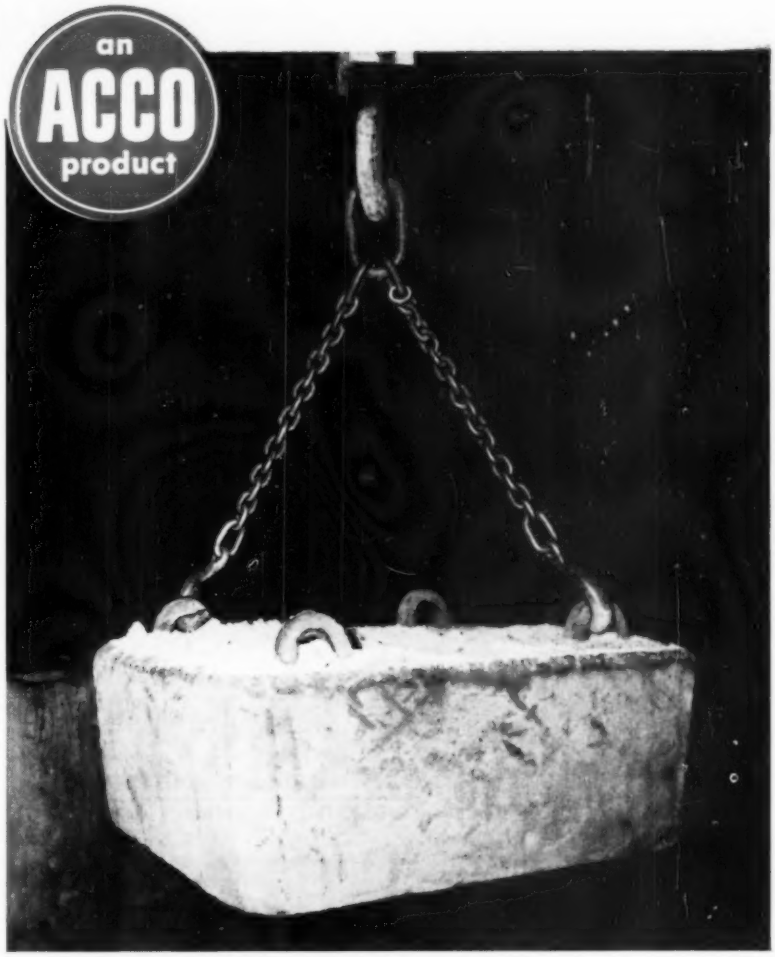
With close cooperation from engineers of American Optical Co., he devised a tempered glass goggle which saved many eyes from injury in a test at a Cleveland foundry.

His firm was merged with American Optical in 1923 where he continued to develop many types of safety and welding goggles now accepted as routine equipment in hazardous operations.

In 1916, the American Museum of Safety awarded Mr. King its gold medal for achievement in the field of safety. He was later elected president of the National Safety Council, and since then, the holder of their honorary life membership.

New President Elected by Electrical Manufacturers

L. G. HALL, president of Stackpole Carbon Company, St. Marys, Pa., has been elected president of the National Electrical Manufacturers Association.



Why Workmen Like ACCO Registered Sling Chains

• One rigger said: "It's a neat factory-made unit that we know is made properly." A foreman said: "My men look for the identification ring. It's sort of a safety indicator."

Every ACCO *Registered* Sling Chain is built and tested as a unit and bears the ACCO identification ring. The sling illustrated above has ACCO Foundry Hooks designed for use on casting molds which get very hot. It is engineered for this particular job and will give long service. It is one of the many types of *Registered* Sling Chain made by AMERICAN to handle safely all kinds of lifting jobs.

Check today with your AMERICAN CHAIN distributor who will help you decide on the correct ACCO *Registered* Sling Chains for your use. Or, write our York, Pa. Office for a copy of **DH-314** ACCO *Registered* Sling Chain Catalog.

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CUTTING OIL
SANITATION

FOR YOUR PLANT!

Here's how to prevent costly coolant spoilage and eliminate foul odors: Ask your DOLGE service man to take samples of your coolant for free bacteriological and chemical analysis. A complete laboratory report will show the correct coolant handling method for your particular operation.

Only if tests warrant it will a DOLGE STERIDOL GERMICIDE be recommended—a "tailor-made" preparation to meet your exact needs. Used as directed it will not irritate the skin or corrode metals. The cost?—Far less than a cent per gallon of coolant.

Write for Booklet "Cutting Oil Sanitation."

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FOR FREE SANITARY SURVEY of your premises consult your DOLGE SERVICE MAN

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(For full details, use Key # B-34 on free Inquiry Card on page 75)

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"ON THE LEVEL"

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STABILIZERS
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★ Ball and Socket Foot permits 100% efficiency performance, with 19 sq. in. of gripping surface.
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(Use Key # B-35 on Inquiry Card on page 75)

Safety Views

(From page 37) use tools, they are a tool in themselves, the Cement & Quarry Section heard from C. A. Gustafson, superintendent of the Callanan Road Improvement Co., Bethlehem, N. Y. He told delegates a good safety-minded maintenance crew is one of the best tools a safety director has because a good maintenance crew can point out potential hazards as they come up in the course of normal repairs. He emphasized the maintenance crew also can be a means to provide safety education to other workers.

"Sell your maintenance crew safety and they'll sell it to the rest of your employees. A good preventive maintenance program is possibly the best means of assuring uninterrupted production." That this program is definitely tied in with safety can better be understood when one realizes a large insurance carrier now does not use safety engineers any more as inspectors, but sends out mechanical engineers," he concluded.

James F. Collins, training supervisor for the Universal Atlas Cement Co., New York, pointed out to the Cement and Quarry Section that safety instruction is most effective when it reaches an individual worker on an individual job instead of a group of workers in a general way.

"A safety program cannot succeed without a careful consideration of the role played by the individual worker," he said. "It is the individual employee who works safely or gets hurt. He must be an integral part of the program, he must know what it is, and he must want to participate."

In addition to providing most effective safety training, individual job training fills two vital psychological needs of the worker, Mr. Collins declared, the need for belonging and recognition.

Chemicals

In the chemical industry, injuries are more prevalent among maintenance workers than production personnel, according to D. W. Gibson, safety director of the Columbia Chemical division of the Pittsburgh Plate Glass Co., Barberton, Ohio. He told the Congress the reasons are:

A production worker does work which is highly repetitive. He is thoroughly familiar with his department, his work and the equipment he uses. Maintenance workers, however, must work in all departments, under changing conditions, equipment, machinery and methods. This is more hazardous.

E. G. Volz, safety director for the Monsanto Chemical Co., Nitro, W. Va., also pointed out to the Chemical Section that, in the chemical industry, maintenance work is particularly dangerous because of the poisonous or corrosive nature of many chemicals. Electrical hazards are common to maintenance in all industries, but indifference or lack of knowledge of the real significance of the dangers is too prevalent, he added.

Earl R. Wallace, safety engineer

for Eastman Kodak Co., Rochester, N. Y., told the Chemical Section that increasing use of welding instead of old-fashioned nuts and bolts is creating increasing numbers of fire hazards which annually result in losses of millions of dollars. He explained that some firms have licked the danger through an "open-flame permit" system.

The permit used by the Kodak firm is in four parts. In this way maintenance supervisor, departmental head, and fire inspector or safety man are made aware of the work to be undertaken. These persons cooperate to make sure that safe conditions for the job are present. Mr. Wallace stressed that the permit system alone does not assure complete safety. Also advisable, he said, are training in fire guarding and publication of rules for safe open-flame work.

Metals

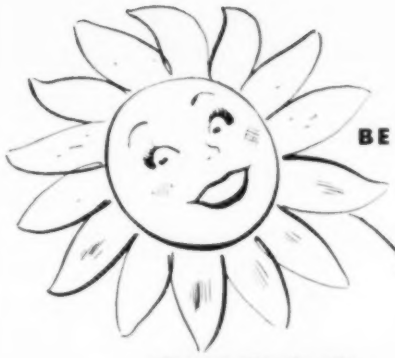
Shocking figures on permanent occupational injuries and deaths, were cited by J. G. Vandeventer, resident director of industrial relations for General Motors' Ternstedt division at Trenton, N. J., speaking before the Congress. According to Mr. Vandeventer, the 1951 industrial accident toll in New Jersey alone was: 201 lives lost, 508 persons who lost either both hands, both legs or both eyes. 24,636 persons who lost either one eye, an arm, a leg or one or more fingers—or had them permanently disabled.

Mr. Vandeventer, told of the great efforts to eliminate one hazardous operation. Actual experience and national statistics proved that press and die operations took altogether too many hands and fingers, so the company:

1. Decreed that there would be "no hands under dies."
2. Changed the attitude of all top brass, who at first did not believe this could be done.
3. Shut down the entire plant of 5 thousand people for a lecture on the new safety procedure.
4. Made changes in engineering and tool design departments allowing for modifications on some 1 thousand punch presses and 5 thousand dies.

What happened?

"We worked seven million manhours without a lost-time or disabling injury—first position in our class in New Jersey. We had the best safety performance record in the history of the plant, and the best of 34 General Motors plants of similar nature in the U. S. and a tremendous increase in production output, a big saving in the cost of the part produced, and a better quality product," Mr. Vandeventer told safety experts.



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Sample sent $2.00 pp

wear Cover's FOG-PROOF GOGGLES

Famous "Nod & Shake" Type

Used by thousands, for years, to protect eyes against paint spray, gases, dusts, fumes, smoke. Can be worn with any make respirator. Frames are of soft, pliable rubber that gives air-tight fit on any shape face. A few drops of water placed in patented groove keeps fog from forming on inside of single lenses. An easy nod and shake of the head keeps lenses clear indefinitely.

Sample sent $2.00 pp

H. S. COVER, South Bend, Ind.

(For full details, use Key # B-36 on free Inquiry Card on page 75)

Watch for an IMPORTANT ANNOUNCEMENT in next month's Safety Maintenance & Production

THE Future SHOWS

Los Angeles, Calif.

February 13–14. General meeting of the California Industrial Safety Conference (Statler Hotel).

Atlanta, Ga.

March 1–3. Thirteenth Southern Safety Conference & Exposition. (Atlanta Biltmore Hotel). W. L. Groth, executive director, P. O. Box 8927, Richmond 25, Va.

Philadelphia, Pa.

March 3–4. Nineteenth Annual Philadelphia Regional Safety & Fire Conference & Exhibit (Bellevue-Stratford Hotel). W. W. Matthews, Managing Director, Philadelphia Chamber of Commerce Safety Council, 17th & Sansom Sts., Philadelphia 3, Pa.

New York, N. Y.

March 24–27. Twenty-third Annual Greater New York Safety Convention & Exposition. (Hotel Statler). E. Willard Merritt, general chairman, Greater New York Safety Council, Inc., 60 E. 42nd St., New York 17, N. Y.

Boston, Mass.

March 30–31. Thirty-second Annual Massachusetts Safety Conference & Exposition (Hotel Statler). Edgar F. Copell, President-Director, Mass. Safety Council, 31 State St., Boston 9, Mass.

Des Moines, Iowa

April 2–3. Fourth Annual Iowa Safety Council Assembly (Hotel Fort Des Moines). Edna M. Woodward, Iowa Safety Council, 720 Grand Ave., Des Moines 9, Iowa.

Kansas City, Mo.

April 9–11. Central States Safety Congress (Hotel President). George M. Burns, Director, Kansas City Safety Council, 419 Dwight Bldg., Kansas City 6, Mo.

Indianapolis, Ind.

April 14–15. Central Indiana Safety Conference (Claypool Hotel). Jack Gunnell, Indianapolis Chamber of Commerce, 320 N. Meridian St., Indianapolis 11, Ind.

Columbus, Ohio

April 14–16. Twenty-Third All Ohio Safety Congress and Exhibit (Deshler Wallick Hotel). R. T. Spencer, Congress manager, Industrial Commission of Ohio, Columbus 15, Ohio.

Toronto, Ont.

April 20–21. Annual Conference of Canadian Industrial Accident Prevention Associations (Royal York Hotel). R. G. D. Anderson, general manager, Industrial Accident Prevention Associations, 600 Bay Street, Toronto 2, Canada.

Niagara Falls, N. Y.

April 21–23. Thirteenth Western New York Safety Conference (Hotel Niagara). Eugene C. Hohl-

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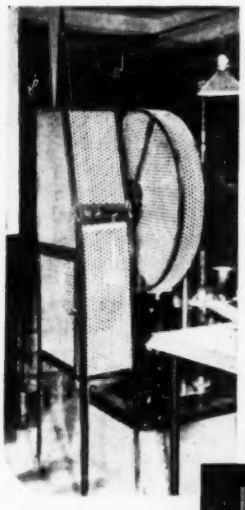

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Your own maintenance personnel can make any size or shape of Guard for the protection of belts, gears and moving parts from these "UL" approved parts at a saving—no special tools required. Our perforated angles and bands are reinforced at corners with our gussets to make the framework which is covered with sturdy perforated sheets. For floor mounting detachable floor posts and sockets provide easy removal.
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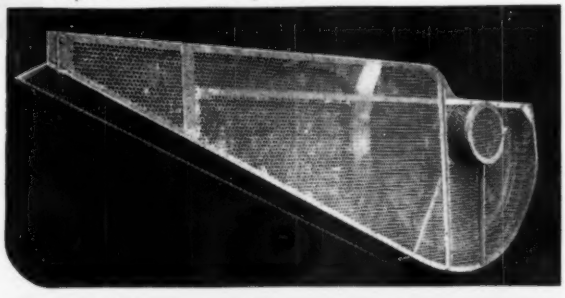

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(For full details, use Key # B-37 on free Inquiry Card on page 75)

stein, executive secretary, Western New York Safety Conference Inc., Buflovak Equipment Division Blaw-Knox Co., 1543 Fillmore Ave., Buffalo 11, N. Y.

Grand Rapids, Mich.

April 21–23. Michigan Safety Conference and Exhibit (Civic Auditorium). Elon J. Schantz, executive secretary, Consumers Power Co., 129 Pearl St., N. W. Grand Rapids 2, Mich.

Charleston, W. Va.

April 22–24. Annual Conference & Exhibit West Virginia Safety Council, Inc. Mrs. W. C. Easley, 316 Masonic Bldg., Charleston, W. Va.

Bridgeport, Conn.

April 23. Eighth Annual Connecticut Industrial Safety Conference (Hotel Stratfield). H. R. Erickson, manager, Connecticut Safety Society, c/o Chase Brass and Copper Co., Waterbury, Conn.

Phoenix, Ariz.

April 27–29. Fifteenth Annual Western Safety Conference Inc. Conference and Exhibit (Hotel Stratfield). H. E. Hodgson, secretary, 310 Luhrs Bldg., Phoenix, Ariz.

Pittsburgh, Pa.

April 28–30. Twenty-eighth Annual Western Pennsylvania Safety Conference & Exhibit. Harry H. Brainerd, executive secretary, 605 Park Bldg., Pittsburgh 22, Pa.

Roanoke, Va.

May 7–9. Nineteenth Annual Virginia State-wide Safety Conference (Hotel Roanoke). William M. Myers, managing director, Richmond Safety Council, 49 Allison Bldg., Richmond 19, Va.

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NOW in one labor-saving operation your maintenance men can keep your entire building clean and sanitary. Regular cleaning with Korex reduces the loss of man-hours due to illness and infection. Rooms and equipment are kept sanitary so that there's less chance of colds, flu, etc., being passed around. Investigate the use of Korex for general purpose cleaning now.

Write for sample bottle of Korex. Test it NOW!

KOREX germicidal cleaner

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Syracuse, N. Y.

May 11–13. Central New York Safety Conference and Exposition (Hotels Syracuse and Onondaga). Walter L. Fox, Safety Division, Syracuse Chamber of Commerce, Syracuse, N. Y.

Winston-Salem, N. C.

May 13–15. Twenty-third Annual North Carolina Industrial Safety Conference (Robert E. Lee Hotel). H. S. Baucom, safety director, North Carolina Industrial Commission, Raleigh, N. C.

Philadelphia, Pa.

May 18–22. Fifth National Materials Handling Exposition (Convention Hall). Clapp and Poliak, Inc., exposition managers, 341 Madison Ave., New York 17, N. Y.

Group of RUEMELIN Fume Collectors Keeps Shop Clear of Welding Fumes

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Recognize your veteran employees—increase loyalty—reduce labor turnover. Show your appreciation for years of loyal service with a Metal Arts Service Award Emblem.

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Fewer Accidents mean more manpower, less lost time. Encourage safety with our Safety Emblems. Emblems can be applied to tie clasps, money clips, lighters, etc.

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Write for Our Brochures

METAL ARTS CO., Inc.
742 Portland Ave. Dept. 13 Rochester 21, N.Y.

(Use Key # B-40 on Inquiry Card on page 75)

Safety Achievements

THE B. F. Goodrich Company's engineering division at Akron, Ohio has been named a first place winner in the National Safety Council's Metals Section safety competition for the contest year 1951–1952. The award earned by the company was for the lowest injury rate in the machine shops group.

While the average for plants entered was 7.74 injuries per million man-hours, the company's engineering division had but 1.32 chargeable injuries during the contest period.

COMPLETION of one full year without a single lost time accident at the Anderson, Ind. mill of the Anaconda Wire & Cable Co. merited recognition—and the 300-odd employees of the mill got it recently in the form of a handsome safety plaque.

Five years ago the accident rate at the mill was very high. Then a concentrated effort was begun to reduce the frequency rate under a 9-point program that included:

1. Installation of a first aid department under the supervision of a registered nurse.
2. Classes in first aid.
3. Five-minute meetings at regular intervals with small groups of employees, conducted by the department supervisor.
4. Daily talks to individual employees by the safety director.
5. Training a fire brigade.
6. Safety posters and safety news on all bulletin boards.
7. Daily inspection of entire mill for unsafe practices and physical hazards.
8. A very successful safety show campaign.
9. Management and supervisor meetings.

FOR the second time in 1952, 1 million man-hours of work without a lost time accident was achieved at the West Pullman plant of the Ingersoll Products Division of the Borg-Warner Corporation located in Chicago, Ill. It can be attributed to two factors; first, and most important, employee cooperation, and second, an intensive safety program of the safety department.

SOME 570 veteran employees of Mine Safety Appliances Company who have completed a total of more than 10,000 years of continuous service with the firm have been honored at a banquet.

Only those employees with 10 years or more of service with the 38-year-old Pittsburgh firm are classified as veteran employees. This year, eighty employees entered the 10-year group.

A VOLUNTARY, humanitarian approach to safety has made the accident prevention work of the Portland Cement Association "the nation's number one association safety program," according to Ned H. Dearborn, president of the National Safety Council. Mr. Dear-

born's remarks were made in presenting an honor award to the association "for outstanding service to industrial safety."

The cement industry was cited by the National Safety Council as being the safest of all heavy industries in 1951, and current figures show accidents have continued to decline in 1952.

The rate of occupational injuries in the plants of member companies of the association has been reduced 87 percent in the past 28 years. During this period it is estimated that more than 2 thousand lives have been saved, 2,700 permanently disabling injuries averted, and over 100 thousand other lost-time injuries prevented as a result of association-sponsored safety programs.

THE Philadelphia plant of the Borden Company's Chemical Division has won a special safety award for a "safety in the home" feature of a year-round divisional accident-prevention program. The award was based on a month-long safety program directed at the homes of the division's Philadelphia employees.

The campaign reduced accidents from 23 in 1950 to 11 through November 1952. A joint venture of management and employees, the safety program is guided by a permanent steering committee composed of workers at all levels. Monthly programs are planned and carried out by monthly safety committees. Added interest in the program was supplied by a game called "Safe-T" which attracted the entire family. Prizes were awarded to winners on a weekly basis. Upon the close of the month-long drive, each family also notified the committee of home safety hazards it had corrected.

The program has cost less than 500 dollars per year for the plants.

EMPLOYEES of the LongLac Pulp and Paper Company Limited at Terrace Bay, Ontario, recently completed 1 million safe man-hours. This achievement was attained as an average of more than 600 employees worked for 255 consecutive days without a single disabling or lost-time injury.

THE Naugatuck, Connecticut, plant of the Naugatuck Chemical Division, United States Rubber Company, has been given an award for 3 million man-hours without a disabling injury. The Naugatuck plant began its record performance on October 12, 1951. It is still continuing the record, and at the present time, has over 3 and a half million man-hours without a disabling injury.

THE world's safety record for the rubber industry is held by the St. Jerome, Canada, plant of the Dominion Rubber Company. The record is 6,411,303 hours without a disabling injury.

3
REASONS WHY
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Industrial
FOOTWEAR IS BEST!
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Patented outside arch and heel that adds to comfort and gives better traction.
Neoprene Oilace Boot shown is available with or without Bar-Flex feature. Neoprene—a special compound that resists oil, grease and acids. Also available, a short black industrial boot with DURATEST Bar-Flex outsole.
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Tested to withstand 2000 lbs. pressure! Here is genuine tested protection against toe injuries — the most common foot hazard to a worker!
Workin—6" all rubber work shoe with appearance of a leather shoe, DURATEST non-skid outsole, cushion insole. Steeltoe or plain. Also, a new Pullon work shoe, of similar construction.
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A new "tougher" rubber compound that gives better resistance to abrasion resulting in longer wear. Tested for extra quality and durability — DURATEST.
Red Buddy Mankato—Work rubber with stretchy uppers and special design DURATEST outsole. Available in black. Also, red or black 2 buckle styles, regular or logger heels, and black storm or hicut pattern with gray outsoles.
BEACON FALLS RUBBER FOOTWEAR
BEACON FALLS, CONNECTICUT
(For full details, use Key # B-41 on free Inquiry Card on page 75)

THE FIRE FRONT

Fire Resistance of Concrete Floors

A NATIONAL Bureau of Standards Building Materials and Structures Report 134, *"Fire Resistance of Concrete Floors,"* by Daniel S. Goalwin, is intended to aid building authorities and regulatory groups in evaluating the fire-resistance characteristics of concrete floor constructions and to give designers and builders a basis for the selection of constructions which will meet fire resistance requirements. The increasing use of concrete slab floors in industrial and commercial building and multiple residential dwellings makes adequate fire-resistance ratings of these components desirable. The proper selection of fire-resistant floor material and the closure of vertical openings can restrict fires in large buildings to one floor for a considerable length of time, allowing abatement measures to be taken in the rest of the building.

Full-scale tests were made in accordance with the American Society for Testing Materials and the American Standards Association specifications for fire tests. This report covers the results of 11 small-scale and 4 full-scale fire-endurance tests on monolithic concrete floors made with siliceous-gravel aggregates. The tests on the small-scale reinforced slabs of four- to eight-inch thickness were carried out primarily to determine the relationship between floor thickness and fire resistance. Among the slabs were a series of six 2½- and 3-inch thick floors tested to determine the fire resistance of concrete floors constructed with prefabricated lightweight concrete joists.

Copies of the report made be obtained (15 cents per copy) from the Government Printing Office, Washington 25, D.C. (Foreign remittances must be in U. S. exchange and should include an additional one-third of the publication price to cover mailing costs.)

Static Electricity Hazards Can Be Virtually Eliminated

FIRES and explosions originating from electrostatic sparks which annually extract large and increasing tolls from industry, can be virtually eliminated according to Robin Beach, head of Robin Beach Engineers Associated. Addressing the annual meeting of The American Society of Mechanical Engineers he said, "Fires and explosions throughout industry which originate from electrostatic cause, outnumber by a wide margin those that result from any other single source. Another costly toll on industry, in addition to that from fire and explosion disasters, is the loss during processing operations which occurs from slowdowns of production, spoilage of stock, outages of equipment, loss of income, and casualties to operators resulting from electrostatic causes."

Mr. Beach stated that the costs of a comprehensive survey of the various electrostatic problems in any industry and of the application of effective antistatic controls have proved "insignificantly small" in comparison with the annual savings realized from the investment. He outlined a program for controlling the "subtle sabotage and destructive behavior" of static electricity, starting with a thorough quantitative investigation of each hazardous

(To page 70)

I KNOW I'M SAFE... with WOODEN SOLES!
• Heat resistant wooden soles
• Strong steel toe
FOR THE FACTORY...
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Wear a Reece "Strong Toe." Comfortable leather uppers. High, roomy steel toe protector, heat resistant wooden sole. Have comfort-safe feet at work in foundries.
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There is no substitute for Reece Wooden Soles
REECE WOODEN SOLE SHOE CO.
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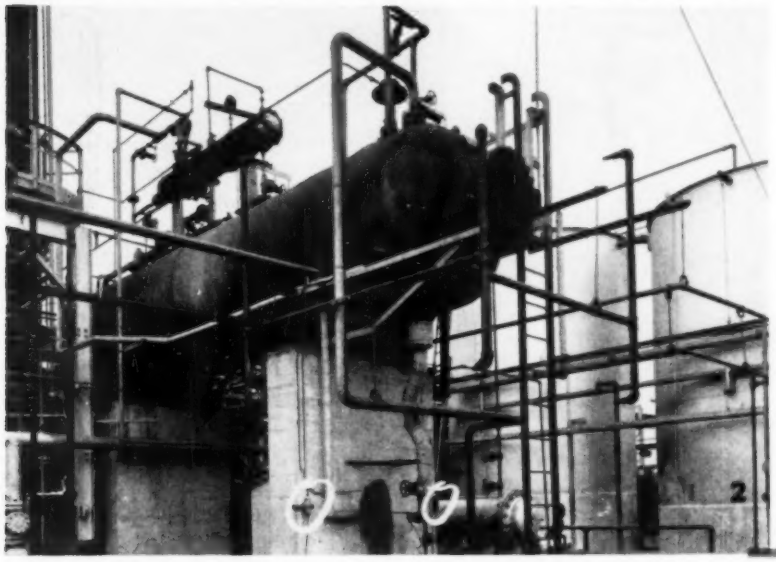
(For full details, use Key # B-42 on free Inquiry Card on page 75)

A "hot spot" is the drain line from the propane work tank. Two air-sampling lines (circled) continuously draw atmosphere from the vicinity for analysis. Danger here is that propane may be trapped in tank drainage and escape from valves or drain sump into the air.



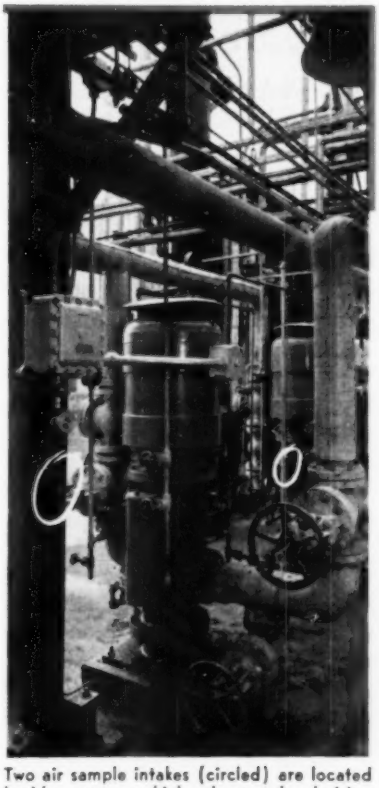
For detailed descriptions of air analysis equipment and alarm systems see pages 8–23 and 416–419 of "Best's Safety & Maintenance Directory" 1952–53 edition.

HOW TO CONTROL PROPANE LEAKS

USE of propane in decolorizing animal, vegetable and marine oils and fats for soap, cosmetic and fatty acid manufacturers has proved to be an economical extraction process; but it calls for strict safety measures because of the high volatility and combustibility of the liquid petroleum gas used as the solvent.

At the processing plant of Refinol, Inc., Cincinnati, Ohio, stringent safety precautions are followed in handling large amounts of propane. Processing capacity ranges from 90,000 to 120,000 pounds per day of animal tallow or grease. When processing, approximately 240,000 gallons of propane are circulated per day. Theoretically, all the fluid solvent employed in the operation is recovered, either under pressure or by recompression, and returned to the starting point. Losses occur only through equipment leakages.

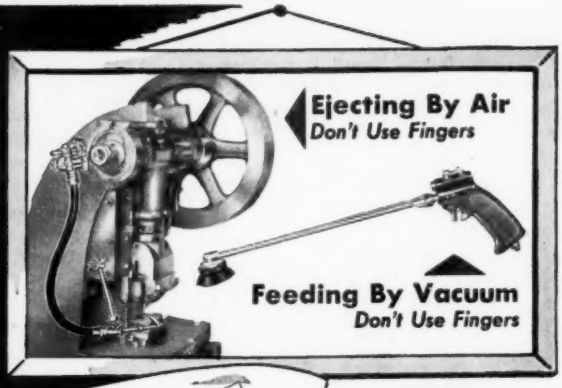
One of the safety problems that confronted designers was to find a method to detect propane leaks in piping, pumps and pressure vessels. It is necessary to use odor-free propane in the process; and, therefore,



Two air sample intakes (circled) are located beside pumps which charge decolorizing tower with propane. The entire area is safeguarded by means of a gas alarm system.

A portable explosion-meter used to make sure finished products are free of propane.

This PICTURE Can be worth $1,000.00 in the SAVING of FINGERS



Amputated Fingers COME HIGH!

These figures are based on maximum rate of Illinois Workmen's Compensation from Division of Statistics and Research, Illinois Industrial Commission. (Figures for other states are higher).

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Pieces forced out safely by air.
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Blanks fed from a safe distance of 14 inches.
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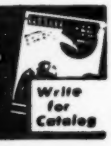
AIR DIVISION
4187 RAVENSWOOD AVE., CHICAGO 13, ILL.
— District Offices: Detroit and Cleveland —



(For full details, use Key # B-43 on free Inquiry Card on page 75)

WRITE FOR LATEST CATALOG SHOWING *SAFETY SIGNS* FOR ALL PURPOSES

STANDARD SIGNS, INC.
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(Use Key # B-44 on Inquiry Card on page 75)

human detection of the gas would be difficult as well as impractical. To safeguard personnel and plant from explosions caused by gas leakage, the company has installed an eight-point combustible gas alarm system. With this system, atmospheric samples from eight strategic locations are analyzed alternately to detect propane-air mixtures. If the mixture reaches 20 percent of the lower explosive limit, a red warning light flashes on the instrument panel in the control house and a klaxon sounds. Indicator lights on the panel also show from which of the eight sampling locations the propane-air mixture was taken. On several occasions, the alarm system has detected and warned of propane-air mixtures before an explosive concentration developed. This enabled personnel to locate the leak quickly and take remedial action. It also prevented the loss of large amounts of solvent.

Explosion-Meters

Besides the permanently installed alarm system, the company also uses portable explosion-meters to spot-check certain areas before any "hot work" like welding or burning is undertaken. These meters have also proved valuable to check the finished product and by-product tanks for the presence of propane. Although the process is designed to remove all propane from finished products, failure or malfunction of stripping-steam equipment could result in some LP gas remaining in the finished tallow. Once an hour, an explosion-meter is used to sample atmosphere from the top of the two 24,000-gallon finished-product tanks and, when necessary, from the one by-product tank. When propane is detected in a tank, the contents are diverted into the crude stream for re-processing.

Sampling locations for the permanent combustible gas alarm system include two at the drain of the propane work tank, one each at the two propane charge pumps, two at the base of the decolorizing tower, one at the grease trap and one at the condensate sampling pots. Sampling intake openings are equipped with mechanical filters. The entire plant, except the boiler house located several hundred feet away, is operated from a small control station containing necessary switches and starters on a well-marked control panel. In this house also, under constant surveillance of operating personnel, is the combustible gas alarm panel. Air samples are piped to the instrument through copper tubing and analyzed individually on a 30-second cycle.

Air Analysis

For analysis, the air sample is passed over a heated platinum filament which is part of a balanced bridge circuit. Any combustibles present in the sample are burned on contacting this filament. The resulting temperature rise increases the electrical resistance of the detector filament. As the resistance of the detector filament increases, the circuit is unbalanced in direct proportion to the percentage of combustibles in the sample. The unbalancing is indicated by a contact-making

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NOW—will save
Accidents LATER!

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Your floors and your floor problems will be thoroughly analyzed. The Hillyard Maintaineer (floor expert) is on your staff, not your payroll for consultation and demonstration of Hillyard treatments, specialized for fall-proof floors

Hillyard treatments for floors that the public walks on and works on have won Underwriters' Approval as slip-resistant. You get tougher resistance to traffic or hauling, longer wear for flooring materials—more ease of maintenance—to reduce costs all around.

These advantages are your guarantee of safe floors —and the Time to Hillyard-treat your floors is NOW —before, not after, accidents happen.

FLOOR HILLYARD TREATMENTS

You know it's right —if it comes in the checkerboard drum.

St. Joseph, Mo.

(For full details, use Key # B-45 on free Inquiry Card on page 75)

meter, visible on the instrument panel. When the propane-air mixture reaches 20 percent of the lower explosive limit the needle of the meter is drawn into contact with a magnetic post, closing the alarm circuit, energizing the warning light and actuating the signal horn. The indicator light for the location from which the combustible sample was taken remains on until the instrument is reset by depressing a momentary contact switch. Air samples are drawn to the instrument by a turbo-compressor pump. The entire instrument assembly itself is of explosion-proof construction. The portable explosion-meter used to assure loading of propane-free products operates essentially in the same manner, except that it is powered with flashlight dry cells, and air samples are drawn into it by means of a rubber aspirator-bulb.

In the decolorizing process, tallow or grease is charged through a heater into the decolorizing tower by a pump. Propane is introduced through a propane charge heater into the bottom of the tower from the propane work tank by a charge pump. A solution consisting of decolorized tallow and most of the liquid propane leaves the top of the tower while a residual mixture of color bodies, a small amount of liquid propane, oxidized fatty acids and moisture initially present in the charge material, goes to the bottom. Recovery of propane from the overhead material consists of primary and secondary vaporizing heaters and flash drums, a steam stripper, a product pump and a product cooler. The bottoms solution is handled in similar fashion. Propane from both the overhead and bottoms recovery processes is returned to the work tank by pressure differential. A small amount of water vapor periodically accumulates in the work tank and must be drained off. It is at this drain that two of the alarm sampling intakes are located.

Outlets of all relief valves in process equipment are piped into two blow-down systems, one high pressure and one low pressure. Header of the low pressure system is piped directly to a tall flare stack, while header of the high pressure system goes to a drum where vapors are accumulated and directed to the suction side of the propane compressor via a jet condenser and trap.

Throughout the entire process, there are many chances for propane to escape around pump seals, flanges, valves and pressure vessels, but the automatic, continuous mechanical gas sampler and analyzer minimizes the chances for a build-up of undetected combustible concentrations.

Other Safety Measures

The entire plant is equipped with explosion-proof electrical and lighting fixtures. Employees wear spark-proof shoes and visitors are required to put on rubber footwear over their street shoes. No matches, lighters or cigarettes are permitted on the premises. These are deposited in a metal box at the gate upon entering the plant. Spark-proof tools are used for all maintenance work. Extreme

• SUPER-SAFE
• MAR-RESISTANT

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CETOX contains chemically hydraoxated Carnauba. No abrasives or silicas added. The slip is out. Its dazzling self-lustre, tough to mar qualities, and safety under foot are amazing . . . even under tracked in or spilled water.

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Approved by York Research Corp. for the American Hotel Assoc.

CETOX Products Co.

HOWARD & WEST STREETS
BALTIMORE 30, MARYLAND

(Use Key # B-46 on Inquiry Card on page 75)

care is used to avoid trapping propane between two closed valves. Steam hoses are provided to blanket propane leaks until the line is repaired or the pressure is reduced. All steam hoses are grounded to avoid the possibility of the steam jet developing static electricity.

Pictures by courtesy of Mine Safety Appliances Company.

Static Electricity

(From page 66)

operation. He emphasized the need for specialists qualified in the technology of industrial electrostatics by virtue of specialized training, broad field experience and research facilities.

He warned, however, that except for the restrictive areas of paper, textile, rubber and plastics manufacture in which conventional static neutralizers may be utilized to a certian degree, no "cure-alls" are applicable to the electrostatic problems throughout other industries. "Tailor-made" resolutions of these problems are the only recourse, he said.

"By installing correctly-applied antistatic controls of either the 'ready-made' or the 'tailor-made' varieties to electrostatic hazards and kindred problems, many industrial processes can be materially accelerated, production increased, costly spoilage reduced, unpleasant and sometimes harmful humidification systems abandoned, production costs decimated, operating expenditures substantially curtailed and personnel injuries and deaths practically eliminated," he concluded.

Hospital Fire Film

A NEW motion picture film for training hospital staffs in fire emergency programs was introduced at the annual convention of the American Hospital Association. Called "Fire and Your Hospital," it emphasizes the importance of hospitals developing emergency plans to prevent possible disasters and cooperating with local fire departments in such plans.

Made by Audio Productions, Inc., of New York, in consultation with the National Board of Fire Underwriters and the American Hospital Association, the 16mm film is now ready for public distribution.

Safety Program

In his introduction, Lewis A. Vincent, general manager of the National Board of Fire Underwriters, said that the film is an outgrowth of a two-year safety program which the insurance business conducted to improve safety conditions in hospitals throughout the nation.

The program, he explained, was developed in the public interest after a series of fires had swept such hospitals as St. Anthony's in Effingham, Ill., with a loss of 74 lives, and Mercy Hospital in Davenport, Iowa, with the loss of 41 lives.

"After these fires," he said, "the whole nation was deeply concerned, particularly those of us with responsibilities for human lives. Whether we were in the hospital management field or in the insurance business, we had the common determination that such tragedies must not happen again."

Hospitals Inspected

Mr. Vincent said that more than 7,000 hospitals were inspected by engineers of the fire and casualty insurance business. The one outstanding finding was that there was need for effective fire safety planning for emergencies.

It was the feeling of the engineers, he added, that if hospital staffs and employees could be given a good organizational plan and instruction on how to act in emergencies, the possibilities of serious fires, panic and loss of life would be materially reduced.

The theme of the film was developed to show how an emergency plan works under fire conditions. Prints in 16mm black and white are available for purchase through NBFU's Film Library, 13 East 37th Street, New York, New York.

What's New . . .

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

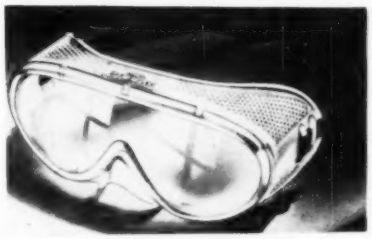
OIL MIST CONTROL UNIT

(Use Key # 697 on Inquiry Card on page 75)

A COMPLETELY redesigned Precipitron Oil Mist Control Unit that will recover the coolant oil from the mist and smoke generated by high speed cutting, grinding, milling and similar machining operations is available from Westinghouse. This redesigned oil mist control unit is available in two models with air handling capacities of 600 cfm and 1200 cfm.

Salvage or recovery of coolant oil is one benefit of this oil mist control unit. Others include reduction in such industrial hazards as slippery floors, fire hazards, reduced illumination and contaminated atmosphere; savings in heating costs by not exhausting usable heated or conditioned air; improvement in employee attitude from working in clean surroundings; and reduction in building maintenance costs for structural members, windows, lighting fixtures, heating ducts and steam and water pipes. Machine tools and floors will not be coated over with a greasy film in an oil and smoke free atmosphere. Self-contained, the heavy gauge sheet steel cabinet houses the all aluminum oil-particle charging and collecting elements, the motor driven fan, duct connection and oil sump.

The fan motors are 3-phase, fractional horsepower, ball bearing, prelubricated, totally enclosed, for 220 or 440 volt service. The power pack operates from a single-phase, 115-volt line and consumes less than 60 watts when operating.



PLASTIC SAFETY GOGGLE

(Use Key # 698 on Inquiry Card on page 75)

A NEW plastic safety goggle trademarked Saf-I-Flex has been developed by United States Safety Service Company. It is claimed that, through new design and the use of newly developed and improved materials, this safety goggle offers features of genuine comfort in wearing and extra strength and durability.

A newly designed frame of pliable vinyl has rolled edges where it contacts the face and new type grid ventilation which makes the goggle comfortable and fog free. The clear frame permits full side vision. The new style lens can be easily and quickly changed. It locks securely into the frame channel at 7 different points and is optically correct. It is claimed that the goggle offers full protection from all impact hazards and exceeds federal specifications for impact resistance and strength. It will fit over very wide personal glasses and is very lightweight (1.7 oz.). It is claimed that the materials used and the replaceable lens feature make the goggle long-lived.

ALTERNATE FLASHING SIGNAL

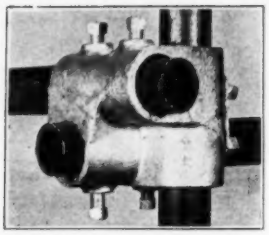
(Use Key # 699 on Inquiry Card on page 75)

AN ALTERNATE flashing signal, designed for application to many types of signs on highways, in plants and other dangerous places, is being manufactured by the Winko-Matic Signal Company. The signal is furnished in 2 sizes to fit all standard 24" and 30" signs and is equipped with either red or amber lens. Signal lights flash alternately and are available for 110 Volt-60 cycle current or to the user's specification. Flashing of lights increases warning value of sign. Device is easily installed and maintained, and rust-proof metal construction is designed to give long life and economy. The signal is applicable to directional as well as warning signs.

PORTABLE PLATFORM STAND

(Use Key # 700 on Inquiry Card on page 75)

DESIGNED primarily for warehouse and stock room use by Metallic Ladder Manufacturing Corporation this heavy-duty, all-aluminum platform stand can be used by plant maintenance and machine repair departments. Back legs are mounted on non-swivel, ball-bearing casters for easy movement. Large wheels available for use over rough terrain. Corrugated rubber safety shoes on front legs. Large working platform with non-slip surface. Wide, ribbed and braced steps. Removable back guard rail. Light in weight yet sturdy enough to withstand unusual loads. Also made in 17½" width to permit use in file rooms or stock rooms with narrow aisles. Available in platform heights from 4 feet through 8 feet.



SCAFFOLD FITTING

(Use Key # 701 on Inquiry Card on page 75)

A SCAFFOLDING fitting, manufactured by the Amidon Engineering Company, converts standard one-inch pipe into adjustable and frame scaffolds. When placed on a vertical pipe, the fitting has two other openings at right angles to each other to hold the two horizontal pipes. The second fitting when placed on a horizontal pipe uses the other two openings to hold the diagonal pipe for bracing. The fittings can be moved to any position on the pipe, vertical or horizontal. This adjustment makes it possible to adjust the pipe to clear obstructions, compensate for uneven foundations, make it any shape or size and to meet all scaffolding conditions.

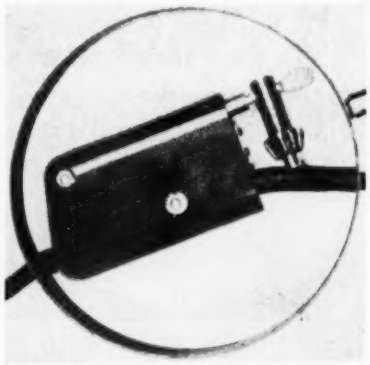
HYDROCARBON DETECTOR

(Use Key # 702 on Inquiry Card on page 75)

A NEW instrument for accurately measuring atmospheric concentrations of the aromatic hydrocarbons—benzene, toluene, xylene—manufactured by Mine Safety Appliances Company is described as "a tool that could be used to good advantage in maintaining safe working conditions."

Known as the "Aromatic Hydrocarbon Detector," the instrument can separate the aromatic hydrocarbon components from other combustibles that may be present in contaminated air. Various mixtures of the 3 aromatic hydrocarbons have been tested to determine the relative effects of blended solvents, and errors in estimates have been found to be consistently on the side of safety. The presence of a masking type of paint deodorant does not interfere. Concentrated vapors of a bland deodorant gave a blank test that rapidly turned into a positive test as a small amount of aromatic hydrocarbon was added. The detector tube was not fooled.

The test procedure was repeated in the presence of turpentine, petroleum ether, ethyl alcohol, butyl acetate, acetone, diethyl ether, chloroform and acetic acid to check possible interferences by other types of organic vapors. All gave a blank test, except the first two at very high concentrations, and in neither case could their negative color reactions be confused with the positive chocolate-brown stain produced at much lower concentrations by benzene and its higher homologues. Within its recognized limits, this detector is a tool which could be used to good advantage in maintaining safe working conditions wherever there is any possibility of atmospheric contamination due to aromatic hydrocarbons.



DRILL SAFETY SWITCH

(Use Key # 703 on Inquiry Card on page 75)

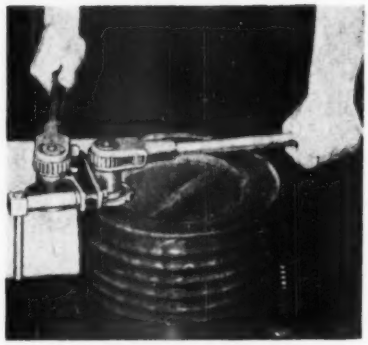
A DRILL safety switch that requires the chuck key to be inserted in it before the drill can be operated has been announced by Tricop Distributing Co. The switch is said to fit all drills, portable and stationary, and has adapters for different size keys.

Many accidents have been caused by operators leaving the chuck key in the drill or accidentally turning on the drill while using the key to adjust the bit. Since the safety switch cuts off current to the machine this type of accident is eliminated.

OXFORD-TYPE SAFETY SHOE

(Use Key # 704 on Inquiry Card on page 75)

AN ADDITION to the Iron Age safety shoe line is a plain toe oxford having an all-leather sole tanned by the patented "Leather-plus" process for maximum flexibility and longer wear. Other features include a Winguard steel toe box concealed by a full leather lining, sweatproof leather inner sole and a cushion of Armstrong cork filler with Dacron stitching throughout. Military style oxford comes with brown leather uppers.



DRUM HEAD CUTTER

(Use Key # 705 on Inquiry Card on page 75)

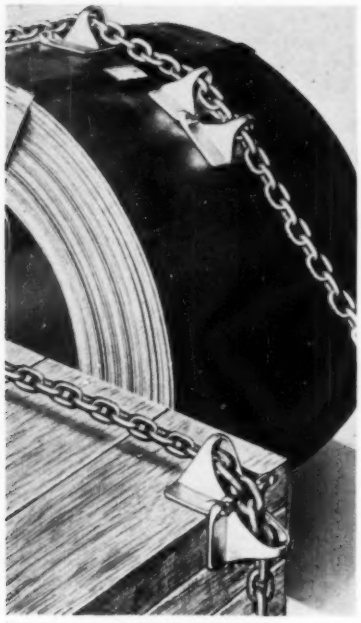
A NEW speedy, light weight and hand operated head cutter is now being manufactured by the Michael A. Schinker Manufacturing Company. It was especially designed to cut out the tops of heads of carbide, caustic soda, cyanide, resin, tar, pitch and other "one-time-shipper" drums and cans of 24 to 30 gauge metal.

Principal feature of this head cutter is that after the cut is completed the container will have a safe, "turned-in" flange which permits its use for many purposes. Secondary port hole covers within the head offer no difficulty. The hazard of poisonous or irritating dust conditions due to agitating the contents of drums is eliminated. Traction is obtained through 2 drive shafts mounted in bronze bearings.

PLASTIC TRAFFIC MARKERS

(Use Key # 706 on Inquiry Card on page 75)

RECENTLY introduced in Canada, and now in the United States, are 3" wide plastic discs for use as traffic lane markers. Manufactured by the Campro Sales Company, the discs (bright yellow or white) are feather-edged, tapering up to 1/4" high in the center, and act as warnings to vehicle operators and pedestrians by feel as well as sight. Called Safe-T-Line Markers, the new discs of a solid-color plastic are resistant to oil, grease, hydrocarbons, or ordinary cleaning solvents. With a life-expectancy of 2 to 5 years, the discs can be applied to any floor or road. Low initial cost, and elimination of painting and maintenance of traffic lanes are suggested as features making the discs acceptable for industrial use. Outdoors, they are reported to have held up satisfactorily under all weather and traffic conditions.



LOAD PROTECTORS

(Use Key # 707 on Inquiry Card on page 75)

NEW metal "Hinge-Guard" Load Protectors, manufactured by Canton Manufacturing Company, protect steel coils, sheets, pipe, tubing, lumber, clay products, crating, machinery and paperboard in transit, and aid in protective unloading as well. There is no chain or cable contact with the load. The protectors allow increased chain tension, making loads more compact and less likely to shift.

Two pieces hinge-lock together to make the unit which will angle from 90 to 180 degrees and they can be used singly by simply lifting them apart. They accommodate chain or cable up to and including ½". If grab-hook is already secured to chain, it will thread through the unit.

PLASTIC WELDING HELMETS

(Use Key # 708 on Inquiry Card on page 75)

AN ENTIRELY new line of onepiece compression-molded plastic welding helmets has been announced by American Optical Company. The new helmet shell is made of thermo-setting fiber glass reinforced with Polyester resin. Its seamless construction makes this helmet exceptionally strong and the fiber glass material is moisture-proof and resistant to high heat. It will not warp and is lighter than vulcanized fiber. Tests indicate superior wear and performance. It has a perfectly smooth surface which can be easily cleaned or sterilized.

The helmet's headgear is made from an entirely new plastic that will not absorb moisture. It conforms readily to any shape head to provide maximum wearing comfort and can be cleaned in antiseptic solution or soap and water.

There are four separate helmets in this new series—one with insulated steel glass holder, including Filterweld plate and clear cover plate; another has a plastic glass holder and Filterweld plate and clear cover plate. Also available on special order are the helmets with plastic lift-front glass holder and with insulated Dowmetal lift-front glass holder.

VACUUM ATTACHMENT FOR FLOOR MACHINES

(Use Key # 709 on Inquiry Card on page 75)

A VACUUM attachment that quickly connects to standard Unico Floor Machines has recently been introduced by United Floor Machine Company. It is known as the Unico DRY-VAC. Sweeping of floors is said to be entirely eliminated during polishing, steel-wooling and sanding operations, because the attachment permits the machine to sweep as it polishes. The saving in man-hours alone, it is claimed, will pay for the unit quickly.

The attachment does away with germ-filled, dust-filled air as it draws the dirt and dust out of cracks and picks up litter and puts it into the bag, instead of sweeping it into the air. During steel-wooling and sanding operations, all the fine particles are drawn into the bag. The vacuum is easily and quickly attached to standard Unico Floor Machines. It plugs into machine and disconnects by simply pulling plug, permitting machine to operate with vacuum idle. Live rubber skirt hugs floor with enough air passage to suck the dirt up. Sleeve-type rubber bumper protects machine and wall surfaces.

WOMEN'S SAFETY CAP

(Use Key # 710 on Inquiry Card on page 75)

A SAFETY cap for women, featuring a flame-proof snood, is being produced by the Alben Packaging Corporation. The cap and snood keep hair from becoming caught in the moving parts of machinery. They also protect the hair from dirt and greasy substances. The flame-proof feature permits use in areas where fire is a special hazard. The cap itself is of tropical worsted designed to stand long, hard wear. A colored visor prevents glare. The difficulty of getting style-conscious employees to wear safety equipment because it is not attractive is said to be overcome by this Lily Dache designed cap.

RUBBER KNEE PADS

(Use Key # 711 on Inquiry Card on page 75)

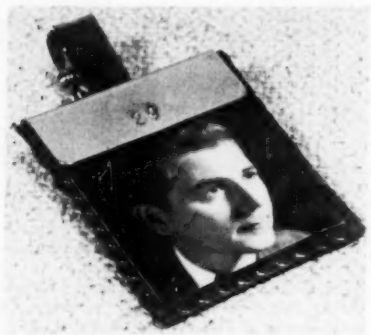
RUBBER knee pads have been supplied to the mining and oil industry for many years by Judson Rubber Works Inc.; expansion to all fields is now under way. The knee pads are molded of black rubber and vulcanized. They have a waffle tread on the under surface that prevents slipping on wet or greasy floors. There is a sponge rubber cushion cemented to the inside surface of the pad to provide a soft resting place for the knee. Adjustable straps are molded into each pad to provide firm fastening and to eliminate eyelets that would not stand up under the tension of the straps.

The design of the knee pads permits a worker to wear them while kneeling, standing or walking and eliminates the need of removing them when not actually working on the knees. They are adaptable to many different kneeling jobs: scrubbing, painting, flooring, cement work, tiling, waxing and carpenter work.

IMPROVED COATED GLOVE

(Use Key # 712 on Inquiry Card on page 75)

AN IMPROVED reinforced neoprene coating is now being used on Edmont's complete line of black NEOX coated fabric work gloves. The new formula is more flexible and has better gripping qualities. It is produced by using special additives with a neoprene base. It is far more resistant to cuts, abrasions, grease, acids, caustics, solvents and heat than neoprene alone. Two weights of coatings are available to meet a wide range of service requirements. Full range of styles from knitwrists to 14" gauntlets. Fully or palm coated.

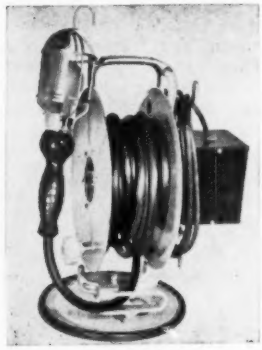


RADIATION EXPOSURE BADGE

(Use Key # 713 on Inquiry Card on page 75)

DOSIFILM, designed to supersede open-faced metal film badges worn to record the radiation exposure of radioisotope and X-ray workers, is offered by R-C Scientific Instrument Co., Inc.

A lead-silver filter and 3 films of varying sensitivity are packed into the plastic envelopes. This combination permits accurate reading of exposures from 20 roentgens down to the low level of 10 milliroentgens. Radiations of various wave lengths can be distinguished because of their various interactions with the filter. The badge weighs only ½ oz. fully loaded. Suspended by a spring clip, it will not make holes in clothing. The film envelope is water-tight and light-tight when clamped into the spring steel closure. The identification number is stamped on the closure to a depth such that it will print on the film when exposed to X-ray. This permanently identifies the film, so that it may be subsequently used as legal evidence of the wearer's radiation dosage. The film can be supplied in 7 distinctive colors to aid in distinguishing between areas or time periods. With a plastic envelope for displaying photographs, it will serve double duty as an identification badge.



SAFETY TROUBLE LIGHT

(Use Key # 714 on Inquiry Card on page 75)

DAMP and wet locations, such as cellars and the inside of boilers and furnaces offer a perfect ground and conductor so that electrical current from a 110-volt lamp can be sufficient to cause death from electrical shock.

The ETRACO Saf-T-Lite, manufactured by Etraco Manufacturing Company, Inc., is helping reduce industrial casualties due to electrical shock. It replaces the 110 volt trouble lamp. The company engineers, in cooperation with several safety engineers, have been working on a new design which will have broad applications and can be used at greater distances from the electrical source. This new model has just been announced and is to be known as the ETRACO Reel-Lite. It employs a reel for holding the extension cord and is available in several different sizes with extension cords of 50 and 100'.

For information on any of the New Products shown on this and the preceding pages, use the Reader's Inquiry Card on page 75.

BOOT DRYER

(Use Key # 715 on Inquiry Card on page 75)

THE Chicago Hardware Foundry Co. announces development of a new Sani-Dri boot and shoe dryer. Drying is accomplished quickly with a 125 cubic foot per minute air stream heated by a 13.5 amp element with a 5300 BTU output. The boots are placed on the boot bracket over the metal tubes, drying is finished by the heated air blowing into the boots. Complete protection to the machine is provided by a sensitive circuit breaker to protect the heating element from excessive overloading. The boot dryer is portable and operates either on AC or DC current.

ANTI-FOG LIQUID

(Use Key # 716 on Inquiry Card on page 75)

INDUSTRIAL Products Company announces a new anti-fog liquid for use on glass and plastic surfaces where fogging and steaming present a problem. The liquid is said to clean and treat in one application and can be used on correction glasses, industrial goggles, shields, masks, windows, mirrors, inside of vehicle windshields, refrigerated showcases, and store windows.

Liquid contains silicones but no alcohol or glycerine. Tests indicate its effectiveness and longer lasting qualities. It is described as flame proof and non-toxic. It is packaged in 4 oz. "squeeze-spray" plastic bottles and is available in bulk units for refilling dispensers in goggle cleaning stations.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

AIR CONTROL

Dust Filters 371
The Day Co. A 16-page bulletin, profusely illustrated, covers the company's line of new "AC" filters. Dimension charts, capacity ratings and diagrams and photos of specially engineered layouts are also presented. The bulletin also contains a dust problem analysis sheet to assist in preparing information for analyzing dust control problems. The continuous-automatic method of cleaning the dust filter cloth with high-pressure reverse air jets is detailed.

Air Conditioning Equipment 372
Air and Refrigeration Corp. Described in this 4-page bulletin are air washers and conditioners, driers, dampers and insulated paneling. Diagrams of typical units, specifications and applications are also found in the booklet. Ease of uniting components to form compact units is featured.

Carbon Monoxide Detector 373
Taller and Cooper Inc. The special features, operation, components and specifications of the company's carbon monoxide detector are carefully outlined in this 12-page bulletin. Suggested installations are also discussed, and attention is particularly called to the way the detector operates. It is designed for public utilities, tunnels, garages, mines and industrial plants wherever there is a carbon-monoxide hazard.

Dust Collection and Blast Cleaning .. 374
Pangborn Corp. The dust collection and blast-cleaning applications of the company's line of small standard units are discussed in this 16-page booklet. Part of the booklet is devoted to applications, proper equipment and the company's equipment for dust collection in 9 classifications. The blast-cleaning section follows the same pattern for 12 classifications. Included in the latter are sections on plant maintenance, production maintenance, municipal maintenance, renovating, cleaning, grinding, finishing, repainting, decorating, shot peening, dies and molds and generators and motors.

Dehumidifiers 375
Westinghouse Corp. This 32-page catalog describes surface dehumidifier units used to control humidity in large buildings. Construction and operation of the units is detailed. Procedure for selecting the correct unit is given and typical specifications are shown and sample problems worked out. The catalog also furnishes information necessary for installation and erection of the dehumidifiers.

FIRE PROTECTION

Fuel Tanks 376
American Safety Tank Co. Explained in this 1-page bulletin are the construction and safety features of vehicle fuel tanks. Illustrations show operation under dangerous conditions and design of tanks. Safety features include strong steel construction, air-space when tank is full, vent caps, expansion chamber and drain-plug design.

Fire Extinguishing Equipment 377
Blaw-Knox Sprinkler Division. Fog nozzles, automatic sprinkler systems for dry and wet pipe installations, alarm and deluge valves and rate-of-rise thermostats are detailed and illustrated in this 4-page bulletin. Featured in the bulletin is the company's new fog nozzle which is said to maintain an effective fog pattern even at reduced pressures and is designed not to clog.

Static Control 378
John Hewson Co. This 8-page illustrated paper discusses static problems present in the textile industry and in processing synthetic fibers such as nylon, fiberglass and others. Present control methods are summarized in relation to their efficiency and uses in reducing static. Schematic diagrams are used to help explain diffuse discharge control of static. This type of control can be applied to many types of textile machinery. The report also analyzes the effect of static on quantity and quality of production.

Magnetic Separators 379
Eriez Manufacturing Co. Explained in this 6-page brochure is the use of magnetic separators to remove iron and steel trash from wet or dry fibers such as cotton, wool, rayon and others. The metal catchers prevent spark-caused fires and protect machinery from metal scrap damage. Typical magnet installations in the textile industry are discussed and the company's separators are described.

Fire Extinguishing Systems 380
Randolph Laboratories Inc. This 12-page illustrated catalog presents manual, mechanical, and automatic-electric carbon dioxide fire extinguishing systems. Their applications to dip tanks, baking ovens, flammable liquid storage rooms, power rooms and other dangerous areas are detailed. Completely illustrated are warning alarms, detectors, timer-delays, motor shut-off switches, remote pull-box releases and other automatic fire controls.

PERSONAL PROTECTION

Safety Shoes 381
Lehigh Safety Shoe Co. Illustrated and carefully detailed in this 12-page catalog is the company's line of safety shoes including women's and men's styles, pacs, boots, workshoes, rubber footwear and oxford styles. Cutaway drawings explain the safety features of the shoes. Particularly emphasized are the oxford style shoes with steel toe cap.

Work Gloves 382
Mine Safety Appliances Co. Plastic-coated, all-purpose work gloves are the subject of this 2-page pamphlet. The plastic gives protection against chemicals, wear and remains flexible at low temperatures. It does not get sticky at warmer ones the bulletin reports. Several styles are listed. A ventilated back is also featured in the glove.

Safety Apron 383
United States Safety Service Co. An apron made of vinyl is the subject of this 1-page illustrated bulletin. The qualities of the work apron are listed as snag-resistance, strong resistance to acids, caustics and oils, ease of cleaning and long life.

Rubber Compound 384
E. I. DuPont De Nemours and Co. Inc. This 6-page booklet discusses neoprene as a long-wearing substance for shoe soles. Included in the bulletin are examples of the compound's resistance to oil, heat, sunlight, aging, gasoline and most chemicals.

Safety Clothing 385
The Olympic Glove Co. Treated in this illustrated 10-page bulletin is the company's line of safety clothing including gloves, leggings, aprons, sleeves, jackets, overalls, coveralls and hoods. All of the articles are treated with a plastic material for greater resistance to chemicals, fire, oil and wear. Specifications and sizes of all clothing is given.

Safety Shoes 386
Record Industrial Co. This well-illustrated 16-page catalog covers the company's line of safety shoes. Dress shoes with steel toe caps have special lining to cut down sock wear under the steel toe. Comfort is emphasized in all types. Work shoes are discussed and special safety shoes to resist chemicals are featured. Electrical hazards are met in one specifically-designed shoe and a separate line of rubber footwear is shown.

FLOORING MAINTENANCE

Floor Machines 387
Finnell Floor Machine Co. Six models of floor maintenance machines with various attachments are featured in this 4-page bulletin. The attachments include polishers, scrubbers, dry scrubbers, sanders, grinders and trowellers. The different applications, specifications and design-features of the different models are described in the bulletin. Vacuuming and shampooing rugs with the machines is also covered.

Concrete Flooring Material 388
Master-Builders Co. This one page illustrated bulletin is devoted to outlining the advantages of using a concrete-flooring material with steel particles embedded in its surface. The material can be used to resurface a floor as well as being laid as an original floor. Among qualities listed are static dissemination, spark resistance, corro-

(Continued on the next page)

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Free Bulletins (Continued)

sion resistance, ease of cleaning and lack of shrinking.

Painting Concrete Floors 389
Goodyear Tire and Rubber Co. A 6-page illustrated folder contains information on proper procedures for preparing and painting concrete floors. It suggests use of alkali-resistant and chemical-resistant paints. The procedures include those for painted floors which are peeling, painted floors in which the paint has no cracks and floors which are unpainted.

Painting Guide 390
The Wilbur and Williams Co. This 4-page folder is a quick reference guide for various kinds of painting. Painting metal for rust control, painting without odor, protecting concrete floors and walls and protecting against chemicals are some of the problems to which answers are given. How to cut costs through the use of paint coatings designed for the purpose is outlined.

LIGHTING MAINTENANCE

Industrial Lighting 391
General Electric Co. Latest of the company's industrial lighting bulletins, this 8-page illustrated bulletin discusses the concept of balanced lighting, as well as sufficient light for each job. Benefits listed are faster output, reduced spoilage, better workmanship and fewer accidents. Lighting problems and solutions for various industries are described.

Lamp Disposal Unit 392
Leduby Co. Inc. This 2-page bulletin describes a unit for the safe disposal of burned out fluorescent lamps. The machine grinds lamps into small pieces under water. Basket collects refuse which can then be dumped into a waste can. Bulletin includes specifications, size, parts and operating qualities of this portable disposal unit.

MISCELLANEOUS

Safety Signs 393
W. H. Brady Co. Self-sticking pipe markers and safety signs and reflective safety signs are described in this 2-page illustrated bulletin. Different wordings of signs are given. Other features detailed are the ease of application, ease of sticking to any surface, sensitive reflection of light on special types, and conformation to uniform size standards.

Material Handling System 394
Clark Equipment Co. The case history of the installation of a fork-truck handling system is the subject of this 16-page illustrated booklet. Also included are examples of cost-cutting in other industries through the use of fork-trucks. The case history is treated from beginning to end, showing how the company was able to determine accurately in advance how much fork-trucks would save in costs and increase storage space.

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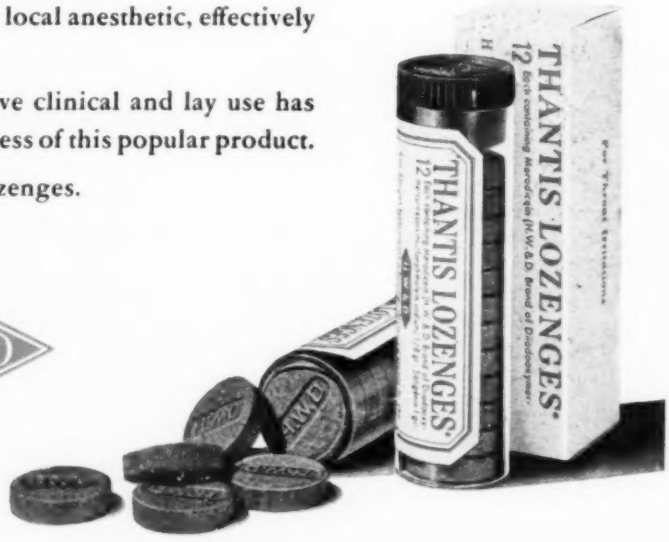

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